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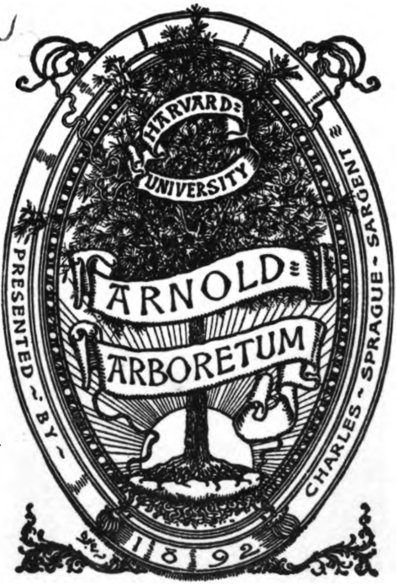

Queensland.

DEPARTMENT OF AGRICULTURE, BRISBANE.

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A COMPANION FOR THE QUEENSLAND STUDENT OF PLANT LIFE.

BY

F. M. BAILEY, F.L.S.,

COLONIAL BOTANIST.

Copies can be obtained free by such persons interested, on application to the Under Secretary for Agriculture, Brisbane.

BRISBANE:
BY AUTHORITY: JAMES C BEAL, GOVERNMENT PRINTER, WILLIAM STREET.

1893.

33476
Aug. 6, 1921

INTRODUCTION OR PREFATORY NOTICE.

First let it be fully understood that this pamphlet is not issued with the presumptuous idea of its being superior to the hundred and one similar works. The compiler has been frequently urged to publish a full glossary of the terms used in botanic descriptions, and in complying with this request he has aimed at combining with a glossary a view of plant life in general. Thus, not only are explanations of the terms used to designate the various organs or parts of plants given, but some account will be found of the functions of the organs themselves. In publishing works like the present in Queensland, one is under the disadvantage of not being able to obtain at a cheap rate the many illustration blocks which are always to be had in Europe, and a number of special plates scattered through a book does not answer the purpose. It is hoped, however, that the plan adopted of giving the name of the plant easily obtainable upon which the particular organ is prominent, or which bears the particular form, will be almost as useful as the usual figure. Thus, for instance, the term "Cynarrhodum" is met with, which, upon looking up the word, will be found to be a name used to designate the fruit of the Rose. Surely, to walk into a garden, gather the fruit off a rose-bush, bring it in and examine with the description herein given, will be far more instructive than even the very best of figures. The work being a compilation from every reliable source available, names of the various works and authors are not given; large use has, however, been made of the works of Bentham, Lindley, Henslow, Masters, De Bary, and Cooke, as anyone conversant with their writings will observe. The whole object of the writer has been to try and smooth the way to a knowledge of botanical nomenclature. It is hoped for this publication, besides being a handy reference book upon botanical subjects, and thus most useful to the student of that science when he may be so situated as not to be able to refer to a scientific library, that from the many notices which will be found scattered through the book upon other matters peculiar to plant life and cultivation, the work will be found also useful to the amateur cultivators of plants generally. This will explain why paragraphs are admitted which can scarcely be called botanical.

To obtain a concise view of a whole plant, the following must be the mode of observation :—First, observe whether—

The *Root* is fibrous, bulbous, tuberous, &c.

The *Stem* is erect, climbing, prostrate, &c.; also its size and arrangement of its branches, &c.

The *Leaves* are persistent or deciduous, opposite, verticillate, or alternate, simple, pinnate, or how otherwise divided, hairy or smooth; the margins as to whether entire or toothletted, if stalked or stalkless.

The *Petiole* (Leafstalk) is long or short, slender, stout, or winged.

The *Stipules*, if any; their position, insertion, figure, texture, &c.

The *Inflorescence*, its form, as cyme, panicle, thyrse, head, raceme, spike, umbel, &c.; and in what position upon the plant, as terminal, axillary, &c.

The *Bracts* and *Bracteoles*, if any; their number, figure, position, &c.

The *Flowers*, their order of expansion, number, form, stalked or not. Observe also if male, female, or hermaphrodite, the position of the sexes, if in the same inflorescence, if on different individuals, &c.

The *Calyx*, if any; its structure, figure, station with respect to the ovary and the axis of inflorescence, surface, æstivation, size, proportion to the corolla, colour, venation, &c.

The *Corolla*, its structure if present, figure, station with respect to the ovary and axis of inflorescence and adjacent parts, surface, æstivation, size, colour, odour, proportion to the calyx and stamens, and venation, &c.

The *Stamens*, their number, direction, æstivation, station with respect to the petals, insertion, proportion to the ovary and corolla; whether separate or combined in one or more parcels; whether in one series or several, of equal or unequal length. Filaments, their form, length, and surface. Anthers, their mode of insertion on the filament; dehiscence with respect to the axis, whether inwards or outwards, and, with respect to themselves, whether transversely or longitudinally, by pores or otherwise, their form, surface, colour, size; the proportion they bear to the size of the filament, the number of their valves, the nature of the connective.

The *Pollen*, its colour, whether cohering or distinct.

The *Disk* and Hypogynous glands if present, their figure, texture, and station.

The *Ovary*, its apparent as well as theoretical structure; the position of its carpels with respect to the organs around it; its surface; mode of division; number of ribs, if any; veins, cells, ovules, their number; insertion upon the placenta; position with respect to the axis of the ovary; the situation of their foramen styles, their number, length, figure, surface, direction, and proportion. Stigmas, their number, form, and surface.

The *Fruit*, its texture, form, whether naked or covered by the remains of the floral envelopes, whether sessile or stipitate; mode of dehiscence, if any; number of its valves and cells; situation of the placentæ; nature of its axis; number of its seeds.

The *Seed*, its position with respect to the axis of the fruit, mode of insertion, form, surface, the texture and nature of the testa, aril, and other appendages, if any; position of the raphe and chalaza. Albumen, its texture, if any. Embryo, its direction; position with respect to the axis of the fruit, to the hilum of the seed, and to the albumen; the proportion it bears to the mass of the latter; the form of its cotyledons and radicle; its mode of germination.

The medical and economical qualities.

The above are the main features to be observed, and until all these are known and recorded a description is not considered to be full and complete, although such may be sufficient to distinguish the plant from its allies.

PARTS OF FLOWERS POINTED OUT, OR FLOWER DISSECTED.

It has been suggested that to some who are just beginning the study of plants, a few plain directions and explanations as to the composition of flowers would be an advantage. To comply with the suggestion would seem to necessitate the use of figures, which must be dispensed with on account of cost. Probably, however, by selecting only the commonest and most abundant plants for examples, the loss of figures will not be felt. As all parts of a plant will be found in the body of the book, here need only be given their position in the flower one after the other. Thus, gather the flower of the common *Sida* weed; its flower is borne upon a slender stalk, *pedicel*; the first whorl of leaves is a five-lobed cup, the *calyx*; the next whorl is the *corolla*, composed of five yellow leaves, the *petals*; the next whorl is composed of *stamens*; in the present flower they are joined together for some part of their length, forming a cylinder; they are free in the upper part, and upon the summit of each *filament* is a globose body; the *anther*, within the single cell of which is the *pollen*; the centre of the flower is occupied by the *pistil*; the swelling at the base indicates the *ovary*; above this is the *style*, which is branched at the top, each branch bearing a *stigma*. The petals of flowers of the Pea family have received distinctive terms; thus the upper one is called the standard or *vexillum*; the two lateral ones the wings or *alæ*; the two lower or inferior ones the keel or *carina*.

Now let a flower be gathered of the common Sow Thistle. What appears the calyx of this flower, as it is termed in common conversation, is called its *involucre*, and the leaves of which it is composed are *bracts*. Within the involucre are a number of flowers usually termed *florets*, the base upon which these rest is termed the *receptacle*; in the present instance it is without *scales*. In some flower-heads of this Order the receptacle bears bristles or scales between the florets. (See the common Bluebottle). The florets are all *ligulate*—that is to say, the slender tube of each floret is furnished at the top with a strap-like limb (wanting this limb the florets are said to be tubular). The stamens will be found inserted in the tube of the corolla, and the anthers will be seen near the top of the corolla tube, cohering into a cylinder round the style. The ovary is inferior, striated (when ripe termed an achene), crowned by a *pappus* of numerous fine soft white bristles (this pappus is the calyx of the floret). The fruit is often carried some distance from the parent plant by means of the light pappus.

Next let an orchid flower be explained—say, a *Dendrobium*, as this genus is abundant with us. The flowers are all on pedicels, and each subtended by a leaf termed a *bract*. The perianth is superior, composed of six segments. The three outer are often called *sepals*; these are nearly equal in length. The lateral ones are, however, obliquely dilated at the base, and connate with a projection from the base of the column into a pouch or spur. The three inner segments form the *petals* (the lower one in the orchid flower is known as the labellum). In the flower being examined the two side petals are nearly of equal length with the upper sepal, the *labellum* is shorter than the other segments, articulated at the end of the basal projection of the column, concave at the base, with the margins gradually expanding into two lateral lobes, which usually embrace the column, the terminal lobe is usually spreading or recurved; the disk usually bears longitudinal raised plaits. The column is the thick centre piece, and consists of the consolidation of the stamens and styles; it is often short, winged at the sides. On the top is the *anther*, and if the lid be removed will be seen the four masses of *pollen* in collateral pairs. Below the anther, or its floor, as it has been termed, there is more or less of a projection. This is what is termed the *rostellum*, and immediately below this, on the inner face of the column, will be seen the stigma.

As the flowers of the genus *Euphorbia* present some difficulty to the botanic student, a description of the inflorescence of one species, with occasional reference to others, is here given. The common garden shrub *Euphorbia* (*Poinsettia*) *pulcherrima* will answer the purpose, so let us take it. The flowers are borne in cymes. The large vermilion-coloured leaves are termed *bracts*; in this species they resemble the stem-leaves in nearly all except colour; these same organs, however, in some other species are very distinct in appearance from the stem-leaves; for instance, in *E. Bojeri* they resemble two fleshy, scarlet petals. *Involucres* on short foot-stalks, articulate at the base, green, ovato-orbicular, toothed, marked by five sutures on the outside, with which alternate, on the inside, five falcate processes, beginning with narrow extremities at the mouth of the involucre, and, adhering to this with their backs, they become gradually broader below, passing inwards, and attached to an elevation in the centre, they divide the lower part of the involucre into five distinct cells, and supporting on their edges erect fimbriæ, they divide the upper part also, but less completely; teeth of the involucre numerous, coloured like the bractæ, woolly on the inside, connivent; gland-appendage single, on the outside of the involucre towards the axis of the cyme, round, entire, peltate, folded in the middle so as to appear two-lipped, nectariferous; four yellow teeth placed round the mouth of the involucre are abortive appendages. These appendages in *E. Mitchelliana* and several other indigenous species are quite white, and resemble petals. In *Euphorbia fulgens* they are bright red. *Male flowers* about fourteen, in two rows in each loculament, and rising from its base, erect, petiolate, naked (without perianth), monandrous, mixed with chaff (abortive male flowers) which are woolly at the apex, and occasionally tinged red there. *Petioles* colourless, as long as the involucre; *filaments* red, *anthers* two-lobed, *lobes* divaricated, so that those which are next each other in the two rows overlap, opening at a deep furrow along their outside. *Pollen granules* yellow, lenticular. *Female* flower solitary central, on a short stout pedicel, naked (without perianth). Styles 3, exserted, hairy, each deeply cleft, or the single style divided to the base into three deeply cleft branches of a dark red colour. Ovary, hairy, three-lobed, each lobe emarginate. Ovules solitary in each cell.—*Bot. Mag.*

FERN STRUCTURE AND SEXUAL DEVELOPMENT.

Probably no class of plants are such general favourites as ferns, therefore a few words as to the botanical names of their various parts may be here given.

The *Roots* proper of ferns are entirely fibrous, often rigid and wiry; when young, often covered with soft hairs.

The *Stem* is spoken of under different terms, as *rootstock*, *rhizome*, and *caudex*, this latter being usually applied to the stem when above ground, whether in the form of a tree-trunk or resembling the stem of a trailer or climber, the term rhizome being applied to the underground stem; in some of these latter, beneath the crown are formed a number of brittle roots resembling the tubers of a Dahlia.

The *Leaves* are termed fronds, and their vernation, with few exceptions (the Adder-tongues and their allies), *circinate* (coiled). The stalk from the rhizome to the lamina or ramification is called the *stipes*; its continuation through the ramification of a compound frond is termed the *rhachis*; *pinna* and *pinnule* being used for leaflets as in other plants.

The *Fructification* is borne upon the back, edge, or on a separate frond or portion of frond. The clusters of fructification are called *sori*, and the part to which these are attached the *receptacle*. The sori is a cluster of *sporangia* or spore-cases, and may be naked, as in *Polypodium*, or covered with an *indusium*, as in *Asplenium*, and nearly flat, tubular or funnel-shaped, as in *Trichomanes*. The spore-cases or sporangia in most cases are one-celled, and more or less surrounded with a jointed ring or annulus. These spore-cases are stalked or stalkless (sessile), and the ring is vertical or transverse, according to the tribe or suborder to which the plant belongs.

Germination.—The spores of some ferns take a longer time than others to germinate after leaving the sporangia. The first stage of their growth is the formation of what is known as the *prothallus*. This is usually somewhat reniform in shape, and composed of cellular tissue. On the under surface are two sorts of organs analogous to the stamens and pistils of flowering plants; these are respectively known as *antheridia* and *archegonia*. The position of these organs has been found to vary in different tribes.

Antheridia.—These are small masses of tissue developed in the same manner as the root-hairs, consisting of a single layer of cells forming the wall and containing a number of spirally-coiled threads, usually with a number of cilia on their anterior coils. At maturity the antheridium swells by the absorption of water and finally bursts its wall, discharging these coiled filaments, which possess the power of locomotion, and for this reason are called *antherozoids*. These antherozoids often drag with them a little vesicle, which seems to play no part in the process of reproduction.

Archegonia.—The archegonium is also a rounded mass of tissue usually less prominent than the antheridia, consisting of an external layer of cells and a large central cell, which soon divides into two. The lower portion, at first the larger, develops into a roundish cell, which is analogous to the ovule of flowering plants, and is called the *oosphere*. The upper portion of the central cell develops between those composing the neck of the archegonium into a canal filled with a sort of mucilage; this finally swells up, forces the cells of the neck apart, and is expelled to aid in attracting and retaining the antherozoid at the neck of the archogonium. The oosphere is thus left exposed.

Fertilization.—The antherozoids, analogous to pollen of flowers, when discharged from the antheridium, swim in the moisture always present on the under surface of the prothallus, swarm in large numbers around the neck of the archegonium, and are retained by the mucilage. Some finally force their way into the canal of the neck, a few reaching the oosphere and disappearing within its substance. Thus it would seem proved that in ferns there exists a true sexual generation. After fertilisation, the neck of the archegonium closes, and the fertilised oosphere, now called the *oospore*, increases in size, and finally develops into a true fern. After the oosphere has been fertilised, it commences its growth by ordinary processes of cell multiplication, and for a time remains within the walls of the archegonium, which continue to grow, until finally the interior growth breaks through the walls, differentiated into its first root and leaf. The young fern draws its nourishment from the prothallus for a time, but soon develops root-hairs, which, extending into the soil, maintain thereby an existence independent of the prothallus, which then withers away. Another mode of reproduction from the prothallus is that it produces buds, without the formation of sexual organs.

VEGETABLE PHYSIOLOGY.

As a large number of the terms explained in this work refer to that part of botany termed Vegetable Physiology, it has been thought well to give in this place a brief summary of the subject. As, however, the author feels that nothing which he could write would be so terse as Dr. Maxwell T. Master's chapter upon the subject in his "Botany for Beginners," free use has been made of it in the present instance.

"The minute structure of plants consists of *cells*, *tubes*, and *vessels*, of various kinds, disposed in various ways. The cells are bladders of membrane, of different shapes and sizes arranged in diverse methods. Within the outer bladder, or *cell-wall* as it is called, are, at least, in the young active condition, certain contents, of which the most important for our present purpose is a mucilaginous fluid, called *protoplasm*. All cells, except those which are old, contain more or less of this protoplasm, which is the most important part of the cell so far as functions are concerned. The bladder, or cell-wall, is merely a kind of protecting skin, composed of *cellulose*, a substance akin to starch. Within the cells are formed or deposited various substances, such as albuminous matter, woody material, starch, sugar, oily and fatty materials, colouring ingredients, and the like. The cells so constituted are usually too small to be conveniently seen without the aid of a compound microscope, but the pith-cells of the English Elder may be distinguished with an ordinary magnifying glass; those of the pulp of an orange by the naked eye, and these latter indeed may, by a little patience, be separated one from another." [In the several species of our indigenous *Citrus* these cells are very free, and separate without the least difficulty.—*F.M.B.*] "All plants of whatever kind are made up of cells such as those just described, and many have no other structure. In the so-called higher plants, however, we meet with tubes and vessels of various kinds and shapes differently arranged. Some of these tubes contain woody deposits, as in those which constitute the wood, or the hard shell of stone fruits; others contain a fine thread or threads coiled up in a spiral manner. A *spiral vessel* is one which contains one or more such threads rolled up within it. Such vessels are found almost exclusively in flowering plants, and constitute, therefore, one of the marks of distinction between them and flowerless plants. By breaking across the leaf stalk of a Strawberry, the fine spiral threads may be drawn out and rendered visible to the naked eye. These tubes and vessels are either elongated cells, or consist of cells placed one over another, the intervening partitions being obliterated. All begin existence as globular cells, and become modified in course of growth. A mass of cells constitutes what is called *tissue*—cellular tissue; a mass of vessels constitute *vascular tissue.* If the cells contain much woody deposit, we speak of the resulting tissue as *woody.* Most plants, moreover, are invested by a skin or bark of some kind. In its simplest and most common condition this consists of one or more layers of flattened cells. Such layers constitute the *epidermis,* or skin.

"The plant, in the majority of cases, is rooted in the earth. In other instances it floats in or on the surface of water; its leaves are exposed to the atmosphere and to the action of light. Unlike an animal, a plant has no separate mouth and stomach; its skin presents an unbroken surface, or at least exhibits, under natural conditions, no aperture through which solid material, however fine, can enter. Its cells and vessels are closed on all sides, as a rule, and have not, except in rare instances, any direct or immediate communication one with another. In animals there is a continuous alimentary or food-channel from the mouth to the stomach and intestines. There is also a series of continuous branching tubes devoted to the circulation of the blood, another set of tubes destined for the passage of air into and out of the lungs, and so forth. In plants there is no such series of directly continuous tubes permeating the whole organism. From these facts it may readily be inferred that no solid substance can enter into or be digested in them. The plant, then, does not live on solid food, but on that which is liquid or gaseous.

"We have now to see whence it obtains its supplies of such nutriment. Rooted in the ground, it has, as a whole, no power of locomotion. But though this is true of the plant as a whole, it does not apply to the parts of which it is composed. The roots, for instance, grow and extend themselves, and they grow most freely in that direction where food is most abundant or easily got at. Let one examine the roots of a tree growing on the banks of a stream, and see what a leash of fine root-threads are produced if the main roots happen to be immersed in the water. In like manner the growth and lengthening of the shoots, and the swaying to and fro of the branches, bring the leaves into contact with gaseous food, and enable them to avail themselves of it without necessitating the movement of the whole plant from place to place in search of nourishment, as is imperative in the case of most animals.

"The roots and the leaves are the chief, and, in many cases, the only feeding organs of the plant. The roots imbibe water from the soil by means of fine fibrils and root-hairs, the older, thicker portions having no such faculty of absorption, but serving merely as conduits and holdfasts. The water which exists in and amongst the particles of the soil dissolves certain of its ingredients, so that when it enters the roots it is not absolutely pure, but holds in solution a small quantity of gaseous as well as of earthy or mineral substances. These are required in the building up of the plant's substance, and in the formation of its secretions. The way in which this solution or earthy and gaseous matter is absorbed into the tissues of the roots has now to be explained. It has been shown that, when a bladder containing some thick liquid, such as syrup, is placed in a vessel of some thinner fluid, such as water, there is a passage of the thinner liquid through the membrane into the interior, so that the thick liquid becomes diluted and the bladder stretched. This is precisely what takes place in the case of the roots. The thin solution of earthy matter passes through the membranous walls of the root cells, there to mingle with the thicker protoplasm which they contain. This process of absorption is technically called *osmosis*, or *endosmosis*.

"Root-absorption is probably always going on more or less, but it is infinitely more rapid and abundant when a plant is in full growth. The fluid when absorbed by the roots receives the name of 'sap.' We know, by observation and experiment, that this sap rises from the root, passes up the stems, through the branches, and enters the leaves. The sap, then, flows upwards, and it is a matter of great interest to ascertain how it is that such a fluid should ascend against gravity." [No thoroughly satisfactory solution of the problem has yet been arrived at.—*F.M.B.*] "The explanations are manifold—several causes co-operate to bring about the result. In the first place, the process of osmosis begun in the root-cells, is continued in the young portions of the stem. Moreover, there now comes into operation a process of diffusion, by virtue of which certain liquids pass through others. Graham, an English chemist, called the thin, readily diffusible liquids, 'crystalloids,' the thicker, less easily diffused fluid, 'colloids,' from their gluey or gummy nature; and he demonstrated that the crystalloid fluids pass through and diffuse themselves amongst the colloid ones. When the leaves are fully expanded another circumstance helps powerfully to promote the rise of the sap, and this is the profuse perspiration or evaporation of watery vapour and fluid from their surface. Let a few leaves be gathered and placed under a tumbler exposed to the sun, and shortly will be seen a quantity of water condensed on the sides of the tumbler, which has been evaporated from the leaves. This outflow takes place to an enormous extent under favourable circumstances, varying in amount according to the pressure, temperature, and moisture of the atmosphere, the quantity absorbed by the roots, and the structure of the leaf itself. There are thus an influx through the root, an upward current through the stem, and an outflow from the leaves. All these act and re-act one on the other; the circumstances that favour the one for the most part influence the others. If the one or the other be in excess, the plant suffers. If the outflow from the leaves be greater than the influx from the root, the plant withers, and unless the balance be restored it will die. If the outflow be stopped while the influx continues, the plant will become unhealthy, and perish if not relieved." [I may here remark that this frequently occurs in Queensland. Growers find soft-wooded plants, such as pelargoniums, &c., passion vines, and even the pineapple, especially in hot wet weather after a spell of dry time, rot at the roots and base of the stems. The cause of this is that the roots have absorbed a far greater quantity of water than the plants can utilise; the cells become overcharged, the circulation is interfered with, and death ensues by what may be termed vegetable dropsy. I might digress still further and venture an opinion that to this overcharging of the root cells may be attributed that long-standing puzzle "The Australian dead forests."—*F.M.B.*] "The upward current is facilitated by the swaying movement of the trunk and branches caused by the wind, the alterations of pressure and relaxations on the cells and vessels tending to squeeze the sap upwards, as shown by Mr. Herbert Spencer. Capillary attraction, or that process by which fluids in contact with fine tubes rise in or between them, as the oil rises between the threads of a lamp wick, may also help to account for the rise of the sap in plants, but is probably less potent than the other causes just mentioned.

"We have now traced the current of sap from the root to the leaf, and in so doing have necessarily adverted to some of the principal duties fulfilled by the root, stem, and leaf. The leaves, however, are not merely concerned in the evaporation of water; they have, as both feeding and breathing organs, other very important duties to perform connected with the absorption and emission of gases. The skin of the leaf, especially on its lower surface, is perforated here and there by small breathing holes, or *stomata*, which contract or open, according to the more or less moist state of the atmosphere, and, perhaps, the intensity of the light. Through these pores liquids and gases enter and escape.

"It is found by chemical research that the greater part of a plant consists of carbon and water, to which are added sundry mineral ingredients, and others containing nitrogen, the latter element playing an important part in the protoplasm and in the albuminoid contents of the cells. As we have seen, the plant derives some of these ingredients from the soil by means of its roots; it can, for instance, procure by their aid water, certain gases—including carbonic acid gas and ammonia—various mineral ingredients and salts, including nitrates, but for its supply of gaseous food it is mainly dependent on the leaves. These organs not only allow of the outflow of water, but they drink it in under certain circumstances like the roots. This is shown by the manner in which a withered plant regains its firmness when syringed. Still it is probable that the most important office of the leaves consists in the interchange of gases. The air contains a quantity of carbonic acid gas (a compound of carbon with oxygen), and upon this, with ammonia (consisting of nitrogen and hydrogen) and water (oxygen and hydrogen), the plant feeds. In daylight, when the leaves are exposed to the sun, they are engaged in imbibing the carbonic acid gas from the air, and in utilising it. They store up the carbon, which is needed for their tissues and secretions, and they set free the oxygen into the air. In this manner, plants, while engaged in feeding by means of their leaves, act in an opposite way to animals. The latter, when breathing, avail themselves of the oxygen of the air, and give out from their lungs carbonic acid and other gases. Thus, what is of no service to the one, is essential to the other, and *vice versâ*. Plants, as they feed, fit the air for the respiration of animals; animals, as they breathe, yield up to the atmosphere the ingredients needed for the food of plants. The following is a simple mode of proving the emission of oxygen gas from plants:—Take a few leaves, place them in a tumbler half filled with water, invert over the mouth of the tumbler a funnel of glass, closing its aperture by a small cork, and place the apparatus in a window exposed to the sun. Shortly bubbles of gas will be observed on the leaves; the gas so formed will accumulate, and ultimately fill the funnel. If now the cork be removed, and a lighted match be applied to the end of the tube, the match will burn with increased brilliancy, or if its flame be previously put out, and the wood be in a glowing state, it will again burst into flame when placed near the aperture of the funnel, thus proving the existence of oxygen gas. At night, or if exposed to darkness, the leaves cease to feed; but as they continue to breathe they set free carbonic acid, and, to some extent, therefore, render the air impure for animal respiration.

"As a result of the interchange of gases, of which we have been speaking, growth, the formation of new tissues, and the production of various secretions, &c., take place. It is the green colouring matter of the leaf, the *chlorophyll*, which is the chief agent in the breaking up of carbonic acid, the setting free of oxygen, and the fixing of the carbon under the influence of sunlight. It is supposed by chemists that the gradual reduction in the quantity of oxygen may account for the formation of starch, various vegetable acids, and other secretions, containing relatively less and less oxygen, till ultimately such substances are formed as turpentine, resins, or other so-called hydrocarbons, which consist of hydrogen and carbon in admixture, and into the composition of which little or no oxygen enters.

"The remaining phenomena of plant life may perhaps be best illustrated by continuing our comparison of them with those manifested in the Animal Kingdom. Anatomically, there is no line to be drawn between plants and animals; the lowest plants and the lowest animals are so much alike, that it often happens that the naturalist is unable to say to which group a particular organism may belong. Physiologically, however, there are differences, as we shall now attempt to show. Regarded as living beings, both plants and animals feel, feed, digest, breathe, grow, move, and increase in numbers. It is in their mode of fulfilling these functions that the chief differences between the two kingdoms consist.

"Plants feel—they respond to stimulus. They may not be able to communicate their sensations as some animals do; but many of the latter are not a whit more communicative on this point than a seaweed. We, as members of the Animal Kingdom, feel the impact or contact of other substances. Light, heat, cold, electrical disturbances, chemical substances, all make us feel; and if the sensation be of a disagreeable nature, we get away from the source of irritation as fast as we can; but if the sensation be pleasant, we endeavour to repeat it. In the case of plants the great stimuli are light and heat. These exert a powerful influence on the protoplasm, as has been shown again and again. The protoplasm of plants, and the 'sarcode' of animals have precisely similar properties. The action of light in giving rise to motion both in plants and animals is well seen in the lower organisms, which, if green—that is, if containing chlorophyll—move towards the light; but if they have no chlorophyll, light has no special influence in determining their movements. Hence the motion witnessed would seem to be depended on the decomposition of carbonic acid gas, and the elimination of oxygen, which takes place under such circumstances as already explained. The protoplasm which lines the cells has *contractile* powers, and these contractile powers are, as we have seen, set in action by the stimuli of light or heat, and probably by electricity.

"There are other movements in plants evincing sensibility. Human beings are apt to blush on the occasion of sudden strong emotions, and this blushing is due to a sudden *turgescence* of the minute vessels, induced by their momentary dilatation. Plants execute movements, due, like blushing, to varying amounts of turgescence. In most active vegetable cells currents of fluids may be observed. These currents are not entirely dependent on contraction of the protoplasm, but on the varying degrees of absortion manifested in it. If one portion suddenly exerts a great power of absorbing water, there is a corresponding flow to meet the demand, hence imbibition causes turgescence, and the turgescence gives rise to the formation of currents in individual cells. When a number of such cells are closely packed together, and are influenced in the same way, not only is there a flow in the cells individually, but there is a rush of fluid from cell to cell, and consequently a movement throughout the whole organ thus affected. In this way the opening and closing of flowers, as well as the folding and unfolding of leaves, may to some extent be accounted for. The curious movement of the sensitive plants are to be explained in a similar manner by the swelling of certain of their tissues, this turgescence being stimulated or set in action by certain stimuli, and checked by others. Climbing plants and some tendrils exhibit two different kinds of movements—the one a spontaneous revolving power manifested in young active shoots, in some plants in one direction, in others in the contrary. The object of these revolutions is to allow the stem to attach itself to some support round which it may twine. How they are affected is not understood; they seem to be spontaneous, and not under the influence of external conditions. The movements of most tendrils, however, are directly excited by contact. A slight touch causes them to move. In orchids (see the labellum of *Pterostylis*, *Caleana*, &c.), and in many flowering plants, displacements take place in the stamens (see *Berberis*), in the style (see column in *Stylidium*), or in the pollen itself, these movements being apparently dependent on contraction of the protoplasm, or on varying hygrometric conditions. Hence, then, so far as feeling goes, if we admit sensitiveness as the equivalent of sensation, we cannot deny that a plant possesses the same faculty as an animal. If we take locomotion or the power of translation from place to place, once considered distinctive of animals, we shall find it is possessed by vegetables as well. This is seen in certain organs of reproduction called *zoospores*, and in the *antherozoids* of Algæ and other cryptogamous plants. The movement in all likelihood depends on the agitation of the fine *ciliæ* or threads with which these organisms are furnished; but we are still ignorant as to the cause that excites the vibration of the cilia.

"As regards the diet of plants and animals respectively, we have already seen that the former cannot take in solid materials. It is far different with animals, the most humbly organised of which have the power in some way or another of introducing solid food into their interior and of digesting it. The nutriment of animals differs, therefore, from that of plants physically. Another difference consists in its chemical nature. An animal not only feeds on solid food, but that food is of organic nature; in other words, the animal enjoys the privilege of eating its fellow creatures, dead or alive. A plant is, however, not confined absolutely to inorganic matter for its diet. It thrives upon and indeed requires organic matter, or the *products* of organic matters; but they must, as a rule, be *waste* products, not living. Plants manured with purely mineral ingredients not only do not thrive, but they are often worse off than others of the same kind that are not manured at all. It is pretty clear, then, that plants cannot live solely upon inorganic materials. Our every day experience shows us, on the other hand, that animals cannot live exclusively upon organic materials. If we want to feed a plant so as to ensure the greatest amount of vigour, we give it organic food in the shape of manure. If we want to digest our own food we take a sufficiency of salt; we give chalk to our chickens, lime and iron to the weak and delicate of our own species.

"The gaseous food of plants has already been alluded to. It remains to notice the breathing process in plants and animals respectively.

"Respiration is an interchange of gases, and this interchange is effected in animals by means of cavities, lungs, gills, or tracheæ; but whatever shape the breathing apparatus assumes, the ultimate result is that the air inspired or expired is passed through a membrane. We know from the researches of Graham that membranes act the part of filters, allowing some gases to pass and retaining others, according to the nature of the filter and of the gases.

"In the lower animals, and in plants, we have no special lungs or gills. There are tracheæ in plants, but they are not specially subservient to respiration; and there is covering the whole surface a thin membranous cuticle or epidermis. This cuticle acts as a filter, allowing the gases to pass by diffusion into or out of the leaf. In addition, there is a direct passage of gases through the stomata.

"In a general sense, then, the mechanism of respiration is the same in animals and plants. The movement of the leaves by the wind probably serve the same purpose as that fulfilled by the muscles of respiration in the case of an animal. The gases exhaled and inhaled during the breathing process are the same in both instances. Constantly there is an absorption of oxygen and a disengagement of carbonic acid gas. The elimination of oxygen by the green parts of plants is, as before stated, not so much an act of respiration as of digestion. The plant is thus constantly exposed to two antagonistic forces—the one tending to build up, the other to destroy, the organism. At certain epochs in certain organs, and if kept in darkness, the plant invariably emits the same gases as an animal does. So also, under the influence of green light, the ordinary action of leaves is partially inverted. In alluding to the effect of light on the disengagement of oxygen gas, it should, however, be remembered that the light can be and is fixed or stored in the plant, so as to operate for a time even in complete darkness."

The work concludes with an addenda in which is given the characters of the seven natural orders of plants with which teachers are to become acquainted who purpose taking botany as one of the subjects at their final examination. Here they will find not only the characters of the order as a whole, but of each suborder and tribe, with also the name of some easily obtainable typical plant of each tribe. To further show plant classification into genera and species, the generic and specific characters of a plant in each order are given. This, and the notes here and there given, will, it is hoped, form an acceptable supplement to the text-book, whether taken advantage of by teachers or not.

F. M B.

1893.

GLOSSARY OF BOTANIC TERMS,

THEIR

EXPLANATION AND APPLICATION,

FUNCTIONS OF THE VARIOUS ORGANS, ETC., AND HINTS ABOUT PLANT LIFE IN GENERAL.

A—As a prefix, denotes absence of an organ, as APHYL'LUS, without leaves; ACAU'LIS, stemless; ACEPH'ALOUS, ACEPH'ALUS, headless.

ABER'RANT—Applied to species or genera that deviate from the usual characters of their neighbours.

ABNOR'MAL—Differing from the usual growth or structure.

ABOR'TION—Signifies an imperfect development of any given organ.

ABORI'GINAL—The same as indigenous; plants which appear to be the spontaneous production of any country.

ABRA'DED—Roughly rubbed off; used in describing Lichens.

ABSTER'GENT—Cleansing, having a cleansing quality, as the fruit of the *Sapindus*, the skin and pulp of which is used as a substitute for soap, for washing linen.

ACCES'SORY—Something superadded to the usual condition of an organ.

ACANTH'OPHORUS — Thorn-bearing; furnished with spines or large stiff bristles.

ACCRES'CENS—Persistent and increasing in size, as the calyx of the Cape Gooseberry.

A'CEROSUS, ACEROSE—Linear and sharp-pointed, needle-shaped, as the foliage of many *Hakeas*.

ACER'VULI—Little heaps of clusters.

ACETAB'ULOSUS—Shaped like a cup or saucer.

ACETA'RIUS—Suited for salads.

ACHASCOPH'YTUM—A plant which has an indehiscent fruit.

ACHENE'—A dry one-seeded indehiscent fruit. The term *Achenium* is applied, by different authors, to two distinct kinds of fruit. 1. Where the fruit is superior, and consequently the pericarp is not invested by the calyx. It is dry, hard, single-seeded, and indehiscent. This is otherwise termed a Nut. 2. Where the pericarp is inferior, and consequently invested by the calyx, in other respects resembling the last, but usually not so hard. The seed of Compositæ are the best samples. For example, see *Cosmos* fruit.

ACHLAMYD'EOUS—Flowers without any distinct perianth.

ACHRO'MATIC—Colourless.

ACIC'ULAR—Needle-shaped.

ACICULA'RI—Basilliform, needle-like and somewhat club-shaped.

ACIDO'TUS—When the branches or other organs terminate in a spine or hard point.

ACID'ULA—Acid or sour, as the fruit of the Sour Plum, *Owenia acidula*.

ACINACIFOR'MIS—Formed like a scymiter.

ACINO'SUS—Shaped like a grape-seed.

ACROCAR'PI—Mosses having their fructification terminating the axis.

AC'ROGEN—A name given to cellular or cryptogamic plants, in reference to the manner in which their stems increase, by additions to the extremity merely.

ACRO'NYCHIUS—Referring to organs having the summit curved like the claw of an animal. (See flowers of *Acronychia.*)

ACTINOPHYL'LUS—Rayed-leaf. (See leaves of *Brassaia actinophylla*, the Umbrella-tree.)

ACU'LEATE—Furnished with prickles.

ACU'MINATE—Tapering to a point.

ACUTE', ACU'TUS—Sharp-pointed.

ACTINEN'CHYMA—The cellular tissue which forms the medullary rays.

ACTINOCAR'PUS—Where the placentæ are arranged in a radiated manner.

ACTINOSTO'MUS—The radiated structure sometimes observable round the little openings termed *ostiola*, on the frond of Algæ, the thallus of Lichens, &c.

ACTINOMYCO'SIS—A disease in animals and man characterised by the development of tumours in the jawbone, vertebræ, lymphatic glands, and other places within which sulphur-yellow bodies like sand-grains occur, each consisting of an aggregate of an organism *Actinomyces*, which is supposed to be a fungus.

ACUTIUS'CULUS—Somewhat acute.

ADDUCTO'RES — The young state of the Thecæ of mosses. These being crowded together are mostly abortive, whilst one only is usually developed, at least, at the same spot.

ADEL'PHIA—A brotherhood. Stamens are monadel'phous, diadel'phous, or polyadel'phous, according as they are arranged in one, two, or several distinct groups or bundles. (See the bundles of stamens in a flower of the "Brisbane Box," *Tristania conferta.*)

ADENOPH'ORUS—Gland-bearing, as *adenostemon*, where there are glands on the stamens. These glands may be frequently met with upon the anthers of the Queensland "Sensitive plant," *Neptunia gracilis*.

ADNAS'CENS (To be born)—Synonym for "Young bulb"; also for suckers of some monocotyledons.

ADNA'TUS, ADNATE — One organ consolidated or united to another.

ADVENTI'TIOUS—When some part or organ is developed in an unusual position. (See roots upon the stems of figtrees.)

Æcid'ium—In Uredineæ; sporocarp consisting of a cup-shaped envelope (peridium) and a hymenium occupying the bottom of the cup—from the basidia of which spores (æcidiospores) are serially and successively abjointed.

Ae'rial—Plants or parts of plants which grow entirely above the surface of the earth or water, as ærophyte, sometimes applied to plants found growing upon the branches of trees.

Æru'ginous, Æruginо'sus — Resembling the green rust of brass.

Æstiva'lis—Produced in summer.

Æstiva'tion—The disposition of the parts of a flower before expansion.

Affi'nity (*Affinis*, neighbouring)—When the relation which plants or groups of plants bear to each other is very close, and depends upon some striking resemblance between their most important organs. Applied in contra-distinction to *Analogy*, where the resemblance, though it may at first appear striking, lies between less important organs. Thus the foliage of many Dicotyledons resembles that of a grass.

Aga'mo-hypnospores — Neutrally formed resting spores.

Aga'mospore — Spore formed neutrally without fecundation.

Ag'amæ—A name sometimes given to cryptogams, resting on the supposition that they are asexual plants.

Agres'tes—Rural, applied to wild flowers, whether indigenous or naturalised.

Agglomera'ted (*Agglomero*, to crowd together)—Collected closely together into a head or mass.

Ag'gregate—Several bodies or organs in close juxtaposition.

Air-Cells—Cavities in the cellular tissue which are sometimes irregular, but often constructed with great beauty and regularity in the form of hexagonal prisms, &c. They are filled with air, and in aquatics serve the purpose of floating the stem and leaves to the surface of the water. In terrestrial plants they give some stems a spongy structure. (See "Rushes.")

A'la—A wing. Alatus—Winged, as the stem or seed. (See seed of any *Casuarina*, the so-called oaks, and the footstalks of the leaves of *Wormia alata*, a Northern coast tree.)

Alabas'trus or Alabas'trum—The flower-bud. A name used by Pliny for the Rose-bud.

Albes'cent—Where any colour assumes a pale tinge, or has a hoary appearance.

Albu'men—A substance found in many seeds, surrounding the embryo wholly or in part, and affording nourishment to the young plant during the earliest stages of germination. It is of a farinaceous, oily, or horny consistency.

Alex'ipharmic—That which counteracts poisons; antidotal. It is said that *Maranta arundinacea* received the name "Arrowroot" because its rhizomes were thought to possess the power of extracting the poison from wounds inflicted by poisoned arrows.

Alectorio'id—Filiform or filamentose, like the thalus of the genus *Alectoria*.

Albur'nitas—A tendency to remain like alburnum. A disease of trees where white rings of wood are interposed among heart-wood.

Alburn'um—The sap-wood or outermost layers of wood in exogenous trees, which have not yet passed to the state of duramen or heart-wood.

Alli'ance—Synonym for "Cohors," as the Ranales, under which title are arranged the several orders which are nearest allies to the *Ranunculaceæ.*

Allia'ceous—Possessing the odour of garlic or onions.

Allo'chrous—Changing from one colour to another.

Alter'nate—One above the other in different lines, as the leaves of many plants, or between other organs, as the stamens in respect to the petals, &c. Alternati'vus, Alter'natus, Alter'nus.

Alter'nate—The leaves of a peach-shoot are alternate upon the shoot.

Alveola'ris, Alve'olate—Studded with cavities, somewhat resembling the cells in a honeycomb.

Al've'olus—A hollow vessel.

Ama'bilis—Lovely.

Am'adon—A soft leathery substance prepared from species of *Polyporus*, and used for economical and medical purposes. The best is said to be prepared from *Polyporus*, now called *Fomes fomentarius*, and *F. igniarius* — two common Australian fungi.

Amæbo'id—Like an amæba—*i.e.*, a small portion of protoplasm exhibiting creeping movement by putting out and drawing in pseudopodia.

Ama'rus—Bitter.

Ambrosi'acus—Possessing a strong scent. For example, see the common weed *Chenopodium ambrosioides.*

Amen'tum, Am'ent, or Catkin—Like the male inflorescence of Conifers.

Am'nios (a fœtal membrane)—A viscous fluid which in some ovules surrounds the embryo in the earliest state, and a portion of which afterwards thickens into the "perisperm."

Amor'phous—Without definite form.

Amphigas'trium—A stipular appendage, peculiar to certain Hepaticæ, which clasp and cover their stems.

Amphisar'ca—A form of fruit having many cells, containing many seeds, superior, indehiscent; indurated or woody externally, pulpy internally, of which *Adansonia* is an example.

Amphi'bious, Amphi'bius — Growing equally in water and on dry land.

Amphi'tropous—Half inverted. When the ovule, being, as it were, attached laterally, the chalaza and foramen at opposite ends of its straight or curved axis are about equally distant from the base or point of attachment.

Amplex'icaul—Stem-clasping. When the sessile base of the blade of a leaf, stipule, or peduncle clasps the stem horizontally.

AMPULLA'CEOUS, AMPULLA'CEUS, AMPULLÆFORMIS—Having the form of a flask.

AMYG'DALOID—Almond-like.

AMYLA'CEOUS—Of the nature of flour—starch grains.

AM'YLUM—Grains—starch grains.

ANÆSTHE'TIC—Capable of rendering insensible, as preparations of the foliage of *Erythroxylon Coca.*

ANAL'OGY—Resemblance to a thing in form but not in function, or in function but not in form. Corresponding with a thing in many points, but differing in more, or in points of more importance. Thus, the flowers of *Potentilla* and *Ranunculus* are analogous.

ANASAR'CA—A disease in plants termed dropsy, arising from a superabundance of fluids in their tissue.

ANASTOMO'SIS—Where branches of vascular tissue re-unite, as in the reticulations formed by the nerves or veins of many leaves.

ANA'TROPOUS, ANATROPUS — Inverted. When the chalaza is at the apex of the ovule and the foramen next to its base, the axis remaining straight. In this, one of the most frequent forms of the ovule, the chalaza is connected with the base by a cord, called the raphe, adhering to one side of the ovule, and becoming more or less incorporated with its coats, as the ovule enlarges into a seed.

ANCI'PITAL (*Anceps*, two-edged)—Flattened or compressed, with two edges more or less sharp. (See the scapes of *Gymnostachys anceps*, a common indigenous grass-like plant.)

ANDRÆ'CIUM—The male organs collectively.

ANDROGYNA'RIS—Double flowers in which both stamens and pistils have become petaloid.

ANDROGONI'DIA—Peculiar zoogonidia produced by female plants, from which male plants are developed.

ANDROG'YNOUS, ANDROGYNUS—When applied to a flower is synonymous with hermaphrodite. Also a spike or head of flowers when male and female flowers are mixed in it.

ANDROPETALA'RIUS — Double flowers in which the stamens have become petaloid, the pistils remaining unchanged.

ANDRO'SPORANGIUM—Sporangium enclosing spores of male plants, or androspores.

ANDRO'SPORE—A special kind of zoospores produced in cells, which originate the dwarf males in Œdogonium.

ANDROUS—In the composition of words derived from the Greek, refers to the stamens. Thus, MONANDROUS signifies having one stamen.

ANFRAC'TOUS, ANFRACTUOSUS—Applied to anthers like those of cucumber plants, which are so winding as to present sinuosities. (See also the anthers of the Kapok tree, *Eriodendron anfractuosum.*)

ANGIOSPERMS', or ANGIOSPER'MOUS PLANTS—Those having the seed enclosed in a pericarp.

ANGU'STUS—Narrow. ANGUSTISSIMO — Divided; divided into the very narrowest laciniæ. (See narrow foliage of *Dracæna angustifolia*, a small tree of North Queensland.)

ANISA'TUS—Partaking of the scent of Anise, as *Illicium anisatum*, the Star Anise.

ANISOME'ROUS or UNSYMMETRICAL—Strictly speaking, applied to flowers when any one of the whorls has a different number of parts from any other; but when the pistils alone are reduced in number, the flower is still frequently called symmetrical or isomerous, if the calyx, corolla, and staminal whorl have all the same number of parts.

ANISOPHY'LLUS—Where one leaf of two placed oppositely is much larger than the other. (See *Strobilanthes* (*Goldfussia*) *anisophylla.*)

ANNOT'INI—Shoots of the past year—ANNOTINUS—Bearing the flowers or fruit upon those shoots.

AN'NUAL, ANNOTI'NUS, ANNUA'LIS—Applied to a plant signfies that it produces seed and dies within the same year in which it first germinated. An annual leaf is one which falls in the autumn, as contradistinguished from an evergreen which lasts throughout the winter.

AN'NULAR, ANNULA'RIS, ANNULA'RIUS—Applied to any organ or set of organs disposed in a circle, and resembling a ring.

ANO'MALOUS, ANO'MALUS—Where a plant is very unlike the great majority of those to which it is most nearly allied, as *Apophyllum anomalum*, unlike other Capparideous plants.

ANTE'RIOR (front) and POSTERIOR (back)—Often used for lower and upper respectively.

AN'THER—That part of the male organ containing the pollen or impregnating substance. It is most frequently formed of two distinct cells, and is very variously shaped, and generally attached towards the summit of the filament, though it is sometimes sessile or without one. When the attachment is at its base the anther is said to be terminal, when by the middle of the back it is horizontal. The cells usually burst by a longitudinal slip to emit the pollen, but in some cases this escapes through pores only. The anther of *Maranta* and *Canna* is reduced to one cell by the other being entirely suppressed. In Laurineæ the anthers have been said to burst by valves, because, instead of dehiscing by a central line, the whole face of the cell separates from the anther, and curls backwards, adhering to it only at the apex, to which it is, as it were, hinged.

AN'THELMIN'TIC—Capable of killing worms. The root of Pomegranate has been used.

ANTHER'IDIA—Certain reproductive organs, supposed to be analogous to anthers, or fecundative.

AN'THESIS—Signifies the period of flowering.

ANTI'SCORBU'TIC—Efficacious against scurvy. A common property of Cruciferæ. ANTISEPTIC—Efficacious against putrefaction.

Antrorse'—Pointing forward, as some lobes or teeth.

Ape'talous, Ape'talus — Destitute of petals. The flowers of *Clematis* are usually apetalous. **Aphyl'lous, Aphyl'lus**—Destitute of leaves.

A'pex—Applied to the opposite extremity of any organ to that by which it is attached, and which is considered its base. **Apically**—At the apex.

A'phides on Rose-bushes in the Open Garden.—The following forms a good wash to destroy these and similar insects :—½ lb. of tobacco waste, or say, 6 lb. of green tobacco leaves, well boiled, and added to about 10 gallons of water; this to be sprayed over the plants. Plants growing in pots may be treated thus :—Place the decoction in a tub, invert the plants, and dip them into the liquid to the edge of the pots. They are then shaken to and fro, to ensure that every insect gets its share of the dip. This makes them very sick, and if the plants are left for a quarter of an hour standing to dry, the insects die. Then the plants can be rinsed with clean water, and be placed back on the benches.

Aphrodisi'acal—Exciting a desire for sexual intercourse. *Justicia* and other plants are said to possess this property.

Ap'iculate, Apicula'tus—Furnished with an apicula; pointletted. **Apiculi**—Minute points. (See *Helichrysum apiculatum*, a very common Everlasting Flower.)

Apocar'pous, Apocar'pus—Signifies that the carpels or ovaries are all free and distinct, like those of the Buttercup.

Apo'physis—A swelling at the base of the theca in some mosses.

Apothe'cium—The rounded, shield-like fructification of Lichens; the entire female fructification of a Lichen.

Applan'ate—Flattened out, or horizontally expanded.

Appress'ed—Signifies that a part is close to another throughout its whole length, as the pubescence on some plants, and branches on others.

Approx'imate, Approximatus — Parts which are close together, but not united.

Aqua'ticus, Aqua'tilis, Aqua'tic—Living or growing in water, as the species of *Potamogeton.*

Arachno'id, Arachno'ideus—Composed of soft downy fibres, resembling the web of a spider.

Ara'neus, Araneo'sus—Arachnoid.

Arbore'scent, Arbore'scens, Arbo'reus—Attaining the size of a tree, or form of a tree.

Arbus'cularis—Branching like a little tree.

Arch'ego'nium—The young female organ in Cryptogamic plants.

Arcu'atus—Bent like a bow, so as to form a large arc of a circle. **Arcu'ato-rugulose**—Wrinkled in an arcuate or curved manner.

Ar'dellæ—The peculiar apothecia in the genus *Arthonia* resembling burnt or cauterised spots.

Ar'dens—Bright, glowing, burnished.

Arena'rius—Growing in sandy soil.

Are'olate, Areola'tus—Covered with areolæ (meshes), spaces distinctly marked out on a surface.

Argente'us—Silvery. (See the leaves of *Hydrangea japonica*, var. *argentea*, or the Silver-thatch Palm, *Thrinax argentea.*)

Argyrophyl'lus — Silvery-leaved. (See *Helianthus argyrophyllus*, the Silver-leaved Sunflower.)

Arid'ity—Dryness.

Arie'tinum—Resembling a ram's head.

Arilla'tus—Furnished with an aril. **Aril'lus**—An expension of the funicular chord, rising round certain seeds in the form of an integument, generally more or less fleshy. The fruit of the native Tamarind and the various species of *Nephelium* furnish good examples.

Ar'millaris—Like a bracelet.

Arista'tus—Awned or bearded. An organ is said to be aristate when the point is fine like a hair. **Aris'ta**—An awn.

Arthono'id—Of the form and consistence of the apothecia in the genus *Arthonia.*

Arthrosterig'mata—Short, straight, articulate sterigmata.

Arti'culate or Jointed—The joints where they separate are called articulations, each separate piece an article.

Arve'nsis—Growing in cultivated grounds, as *Stachys arvensis*, the Hedge Nettle, a common garden weed.

Ascen'ding, Ascen'dent—Where an organ starting horizontally or rising obliquely from the base curves upwards, and ultimately attains a vertical position.

As'cus—A bag. The cases which contain sporidia or spores are so called. (See also "Theca.")

Ascy'phous—Without scyphi or cups.

Aspar'agus—This useful vegetable is not as frequently found in Queensland market gardens as one could desire. In case this may be from a want of the knowledge as to how to prepare a bed, directions are given :—The soil should be trenched 2 or 3 ft. deep, and manure be very liberally mixed in during the trenching. If the soil be light and open, nothing more will be required, but if heavy it should have sand added and charred vegetable refuse, so as to bring it into a friable state. If very heavy, take out the soil to the depth of 3 ft., rejecting all that is not in an ameliorated condition, which may not be more than the top spit, and mix with this an equal quantity of turfy light loam, vegetable soil or refuse at least half decayed, or leaf soil and well-decayed manure, the whole being thoroughly incorporated and a fifth part of sand added, and with this compost fill up the space intended to be planted a foot higher than the general ground level to allow for settling. Plant 1-year-old plants in about July or August, in beds 4 ft. wide with 2 ft. alleys between them, three rows to be in a bed and the plants 1 ft. apart. If large heads are wanted, plant in rows 3 ft. apart and the plants 1½ ft. asunder. Seed may be sown and the plants thinned out to a proper distance. See that the bed is well drained.

Asper—Furnished with harsh hairs. (See Prickly Fern, *Doodia aspera.*)

Aspergillifor'mis—Little tufts of hair which, collected together, assume the form of a brush.

Assimila'tion—That act by which a plant converts nutritious matter into its own substance.

A'ter (In composition, *atro*)—Pure black, as **Atro-purpurens**, blackish red; **Atro-virens**, green, a little verging upon black.

Atra'tus—Becoming black.

Aste'rias—Stellate, starry.

Attenua'tus — Diminished. Where the breadth is gradually diminished towards either extremity, as *Asplenium attenuatum.*

Aucupa'rius—Having a tendency to attract birds.

Aulacocar'pa (*Aulax*, a furrow, and *karpos*, fruit)—Fruit furrowed. (See *Acacia aulacocarpa*, the Hickory Wattle pods.)

Aura'tus (*Aureus*, golden)—Of a bright golden colour; composed of yellow with a small portion of red.

Au'ricle—This is applied to the rounded appendages at the base of some leaves.

Auricula'tus — Provided with ear-like lobes or processes, as the leaves of *Solanum auriculatum.*

Austra'lis—This term is found used in two senses; thus *Castanospermum australe* is so named from being an Australian tree (Moreton Bay Chestnut), but *Pinus australis* is so named from being found in the southern swamps of America.

Avicula'ris—Supplying birds with food. (See *Solanum aviculare.*)

Awn—A stiff bristle-like appendage, as the beard of some wheats.

Axil—The upper angle formed by the attachment of a leaf or branch to its support.

Ax'ile—Proceeding from the centre or axis. (See "Placenta.")

Axil'lary, Axilla'ris—Occurring in an axil.

Az'ure, Azu'reus—Of a lively pale blue, like the sky. (See *Salvia azurea.*)

Bac'ca—A berry. **Bacca'tus, Bacci'ferus**—Bearing berries, or having a succulent nature like that of berries, expressed by *Bacciformis.* The true meaning of the term is—Many-celled, many-seeded, inferior, indehiscent, pulpy; the attachment of the seeds lost at maturity, when they become scattered in the substance of the pulp. The English Currant, *Ribes*, is a good example.

Bacil'lar, Bacil'liform—Club-shaped.

Bacil'li, Bulbilli, and **Propagines**—Names which have been used for the small bulbs often formed upon the stems of species of *Lilium* and *Alliums.*

Ba'dius—A reddish or chestnut brown.

Balaus'ta—Fruit formed like the Pomegranate, indehiscent, inferior, with many cells and seeds. The seeds coated with pulp.

Barba'tus—Bearded, as *Dianthus barbatus*, the Sweet William.

Bark—The external coating which lies outside the wood, within the epidermis. It is, like the wood, arranged in annual concentric circles, of which the outer older ones become dry and hard, forming the *corky layer or outer bark*, which, as it is distended by the thickening of the stem, either cracks or is cast off with the epidermis, which is no longer distinguishable. Within the corky layer is the *cellular* or *green* or *middle bark*, formed of loose thin-walled pulpy cells containing chlorophyll; and which is usually the layer of the preceding season. The innermost and youngest circle, next the young wood, is the *liber* or *inner bark*, formed of long, tough, woody tissue called bast-cells.

Ba'sal, Basila'ris, Ba'sis, Base — As attached to the base of any organ or part. That extremity at which an organ is attached to its support, and by which the nourishing vessels enter it opposite to the *apex* or summit.

Basid'ium—A cell bearing on its exterior one or more spores in some Fungi.

Bi—Two in composition. Thus—biden'tate, 2-toothed; bi'fid, 2-lobed; bifo'liolate, 2 leaflets; bifoliate, 2 leaves; biternate, twice ternately divided; bijugate, 2 pairs (juga); bilabiate, 2-lipped; bilo'bed, 2-lobed; bilo'cular, 2-celled; bipar'tite, when deeply divided into two parts; biplicate, doubly-folded, &c.

Binate'—Synonym for "Geminate." (See *Drosera binata*, a beautiful Sundew, common in coastal swamps.)

Bleeding—(See "Grape Vines").

Blet'ting—The first change after the sugar in the ripe fruit has commenced to oxidate is called "bletting." It is, in fact, the intermediate stage between maturity and decay.

Botany (*Botane*, a plant)—Synonym for "Phytology."

Botryo'id—Collected in clusters, supposed to resemble a bunch of grapes.

Boyaux—A term introduced by M. Adolphe Brongniart to denote the tubes that issue from the grains of pollen upon their contact with the stigma, and descend through the style by elongation till they reach the ovary, carrying with them the *materiel*, or principle, of fecundation. In the books of English writers they are usually called pollen tubes.

Brachia'tus, Brachiate'—Where successive opposite pairs of branches are placed at right angles to each other.

BRAC'TEA, BRACT—The leaves more or less modified in form, which are seated on the peduncles. They are frequently reduced to mere scales, and are sometimes highly coloured and resemble the parts of the flower. **BRACTEOLES**—Small bracts, seated on the pedicels, the one or two last bracts under each flower.

BRUMAL, BRUMA'LE—Belonging to winter.

BRUN'NEUS—Deep brown, formed by mixing dark grey with red.

BUL'LA'TUS—When the spaces between the nerves of a leaf present convexities on one side and concavities on the other, giving the whole surface a blistered appearance.

BYSSO'ID—Very slender, like a cobweb.

CADU'COUS, CADUCUS—Ready to fall; when a part falls off very early, compared with other parts with which it is associated, as the sepals of the Poppy flower.

CÆRUL'EUS—Pale blue. Fruit of Native Ginger, *Alpinia cœrulea.*

CÆ'SIUS—Ash-grey.

CÆSPITO'SUS, CÆSPITOSE—Tufted, as *Poa cœspitosa*, a common grass.

CALATHI'DIUM, CA'LATHIS—Basket-like.

CALCAR—A spur. **CALCARA'TUS**—Furnished with a spur.

CALA'THIFORM—Like a bowl or cup.

CALCA'REUS—Of a dull chalk-white colour.

CALCEIFOR'MIS—Shaped somewhat like a shoe.

CAL'LI—Small callosities, or rough protuberances. Sometimes these organs add greatly to the beauty of the flower. (See flower of *Calodendron capense*, the Cape Chestnut; and the flower of *Caladenia*, a genus of terrestrial orchids.)

CAL'LOUS — Hardened and usually thickened.

CALYCA'TUS, CALYCI'NUS—Used to imply that the calyx is large or remarkable. (See *Bryophyllum calycinum.*)

CALYCIFLO'RÆ—(3rd Series of Polypetalæ.) Stamens and petals usually inserted on the margin of a thin disk lining, the base or the whole of the calyx-tube, and free from the ovary unless the calyx-tube is also adnate to it. Stamens definite or indefinite. Ovary either free and superior, or enclosed in the calyx-tube, or inferior and adnate to the calyx-tube. (For examples of this series see Peas, Beans, Acacias, Roses, Sundews, &c.)

CALYP'TRA—The outer covering of the sporangium of mosses.

CA'LYX—Cup of a flower; the outer whorl, and composed of separate or connate sepals. In the latter form it is spoken of as calyx-tube, and the free part as lobes or teeth. Sometimes the calyx is composed of a large number of sepals, of which the outer ones pass gradually into bracts, and the inner ones into petals.

CAM'BIUM—A highly viscous fluid, elaborated by the internal organs of plants, and serving for the nourishment of their several parts. The term is more especially applied to the clammy secretion, formed in spring, between the bark and wood of Dicotyledonous trees.

CAMPANULA'TUS, CAMPAN'ULATE — Bell-shaped.

CAMPE'STRIS—Growing in fields. The common English Elm, *Ulmus campestris.*

CAMPYLOT'ROPOUS—Incurved. The ovule is so called when the chalaza coincides with the base of the ovule; the axis of the ovule is curved, bringing the foramen down more or less towards that base. Synonym, "Campuli'tropus."

CANALICULA'TUS—Channelled. Applied to leaves which are long and concave, so as to resemble a gutter or channel, as the leaves of *Cymbidium canaliculatum.*

CANCELA'TUS, CANCEL'LATE — Latticed, where there is an appearance somewhat resembling lattice-work.

CAN'DIDUS—Pure bright white. (See *Zephyranthes candida.* It was this plant which suggested the name of the river La Plata.) This plant about Brisbane is known as White Crocus.

CANES'CENS, CANUS—Hoary; more or less grey, verging on white. (See *Callicarpa cana.*)

CAPER PLANT—Mr. Hill had a nice healthy plant of this in the botanic garden; it was, however, lost by being removed, and I cannot find that plants have since been introduced. Besides its economic uses, this plant is showy, and well worthy of a place in the garden. It produces fruit in abundance, and the seeds germinate freely; but being very liable to damp off, another mode of propagation may be pointed out: The plant is deciduous. When it first breaks forth into leaf in the spring, take off the young shoots when about an inch long with the thumb and finger, and dibble these into a pot of compost made of sand (white), three parts, and charcoal (powdered or broken fine), one part, and place in frame or greenhouse; these will soon form roots, and may then be potted off in the ordinary manner.

CAPILLA'CEOUS, CAPILLA'CEUS, CAPILLARY—Hairy, or like hair, as fine as hair.

CAPILLI'TIUM—Sterile thread-like tubes or fibres, often branched or combined in a net, interpenetrating the mass of spores within a ripe sporogenous body.

CAPITA'TUS, CAP'ITATE—Terminating in a knob, as the pistil of many plants; or clustered, as the florets of the Compositæ.

CAPI'TULUM, CAPITULE—A dense head of flowers. The term is also applied to the portion of the apothecium in the genus *Calicium*, which is on the top of the stipes.

CAPREOLA'TUS—Bearing tendrils. **CAPREOTUS**—Synonym for "Cirrhus," a tendril.

Cap'sule or **Pod**—(The latter is frequently used when it is long and narrow, and "capsule" or "pouch," when it is short and thick or broad.) A dry dehiscent seed-vessel. When ripe the pericarp usually splits longitudinally into as many or twice as many pieces, called *valves*, as it contains cells or placentas. If these valves separate at the line of junction of the carpels—that is, along the line of the placentas or dissepiments, either splitting them or leaving them attached to the axis, the dehiscence is termed *septicidal*. If the valves separate between the placentas or dissepiments, the dehiscence is *loculicidal*, and the valves either bear the placentas or dissepiments along their middle line, or leave them attached to the axis. Sometimes, also, the capsule discharges its seeds by *slits*, *chinks*, or *pores*, more or less regularly arranged, or burst irregularly, or separate into two parts by a horizontal line. In the latter case it is said to be *circumsciss*.

Carbona'ceous—Black, like charcoal.

Carce'rulus—A dry indehiscent many-celled fruit, with few seeds in each cell; the cells cohering round a common style placed in the axis, of which the fruits of *Tropæolum* and *Malva* are examples.

Cari'na—A keel. **Carina'tus**, **Carina'ted**—Keeled.

Carminative—Having properties which expel wind, promote perspiration, as the common Spearmint.

Car'neus—Pale red, of a flesh colour. **Ca'rnosus**—Fleshy. (See the flowers of *Pentas carnea*, and leaves of *Hoya carnosa*.)

Car'pels, **Carpel'la**—One of the subordinate parts, whether free or cohering, which compose the innermost of the four sets or floral whorls, into which the complete flower is separable. It bears the same relation to the gynæceum as the sepals to the calyx, and the petal to the corolla. Carpels are usually sessile; if stalked, their stalk is called a *podocarp*. This stalk, upon which each separate carpel is supported above the receptacle, must not be confounded with the *gynobasis*, upon which the whole pistil is sometimes raised. Carpology is that part of botany which treats of fruits and seeds.

Carpo'phore, **Gynophore**—Fruit-stalk

Carpo'spore—Spores produced (by conjunction) in a sporo-carpium.

Cartilagi'neus, **Cartila'ginous**—Gristly, of the consistence of cartilage or of parchment. (See *Blechnum cartilagineum*.)

Carun'cula—A swollen fungus-like excrescence on the surface of some seeds, about the hilum. Synonym for "Strophilole." (See the castor-oil seed.)

Caryop'sis, **Cariop'sis**—A dry one-seeded indehiscent fruit. The integuments of the seed cohering inseparably with the endocarpium, so that the two are undistinguishable; in the ovarium state evincing its compound nature by the presence of two or more stigmata, but nevertheless unilocular, and having but one ovulum. The grains of Maize and Wheat are examples.

Cat'aplasm—A plaster or poultice. Plant used for the purpose, as mustard, ginger, &c.

Catarrh'al—Of or belonging to a cold. The gum of some Acacias is useful to relieve colds.

Cathar'tic—Purgative.

Cat'kin—A peculiar form of spiked inflorescence where the flowers are unisexual, closely crowded, and the place of each perianth is supplied merely by a bract. (See "Amenta.") Good examples may be seen in the male inflorescence of the Bunya, She-Pine, &c.

Cau'da—A tail. **Cauda'tus**—Tailed or tail-pointed. **Caudi'cula**—An elastic appendage to the pollen masses of certain orchids.

Cau'dex—The main trunk of the root; also the stem of palms and fern-trees.

Cau'lis—A stalk or stem. **Caules'cent**, **Caules'cens**—Where a stalk is distinctly visible. **Cauli'nar**, **Caulina'ris**, **Caulina'rius**, **Cauli'nus**—Belonging to the stem, or growing from it.

Caulocar'pic, **Caulocar'pous**, **Caulocar'peus**, **Caulocar'picus**—Terms used for trees and shrubs whose woody stem and branches do not die away, but continue to bear flowers and fruit for a succession of years.

Cau'loid—Resembling or analogous to a stem.

Caustic'ity—Having a burning quality, as the root of *Plumbago rosea*.

Cell, **Cel'la**, **Cel'lula** (A little cellar)—Each of the vessicles of which the cellular tissue is composed. It consists of minute granules, containing nitrogen, and coloured green under the action of sunlight. These granules are most abundant in the layers of cells immediately below the surface or epidermis of leaves and young bark. The green colouring matter is soluable in alcohol, and may thus be removed from the granules.

Cell-Contents—The principal organised contents of cells are sap, sugar, dextrine, starch or fecula, chlorophyll, chromule, which see under their several headings; also wax, oils, camphor, and resinous matter are common in cells or in cavities in the tissue between the cells; also various mineral substances, either in an amorphous state or as microscopic crystals, when they are called *raphides*. One of the gigantic climbers of the North Queensland scrubs receives the generic name of *Rhaphidophora*, from the large number of raphides contained in the cellular tissue. They are also far too abundant in the fruit of *Monstera deliciosa*.

Cel'lular-Tissue—An aggregation of minute membranous vessicles of various sphæroidal or polygonal shapes, filled with fluid, and of which the main bulk of all vegetables is composed. (See "Parenchyma," "Prosenchyma," and "Vascular Tissue.")

Cel'lulose—The chemical substance of which the cell-wall is composed.

Centri'fugal—Applied to those forms of inflorescence whose terminal or central flowers expand first. The general inflorescence of Compositæ is often centrifugal.

Centri'petal—When the lowest flowers open first, and the main stem continues to elongate, developing fresh flowers. The inflorescence within the head of Compositæ is always centripetal.

Cera'ceus, Cere'us—Waxy.

Cera'sino-rufes'cent—Cherry-red.

Cera'tium—A long horn-like, one-celled pericarp, with two valves, and containing many seeds attached to two placentæ, which are alternate with the lobes of the stigma. The Horn Poppy, *Glaucium*, is an example of the fruit.

Cerea'lis—Belonging to corn, wheat, barley, oats, &c.

Ce'rinus—Of a wax colour, impure yellow, slightly tinged with red.

Cer'nuus, Cer'nuous—Hanging down the head, drooping, pendent, as the fruiting spikes of *Lycopodium cernuum.*

Cervi'nus—Dark tawny, or deep yellow with a little grey.

Chaff, Palea, Paleæ—The inner bracts or scales in Compositæ and grasses, and some other plants, when of a thin yet stiff consistence, usually narrow, and of a pale colour.

Chala'za (from the Greek)—The spot on the skin of the ovule looking like a hailstone. The scar is formed at the spot where the inner integument of the ovule (the secundine or tegmen) is united to the outer (the primine or testa); and through which a vascular chord (the raphe) passes to nourish the nucleus, which is also attached by its base to the same spot.

Chamæ—Dwarf or a miniature representation or reminder, as Chamædrys, dwarf oak; Chamæmorus, dwarf mulberry.

Chlo'rophyll—The green colouring matter of leaves, and other green parts of plants.

Chlorophyl'lose—Resembling the green matter of leaves.

Chloro'sis—A disease incident to females, characterised by a pale or greenish hue of the skin, for which the common Horehound has been used as a remedy.

Chro'mule—Synonymous with "Chlorophyll," except that the matter is not green.

Chroolepoid—Consisting of minute yellow scales.

Chry'so—In compounds, signifies golden yellow, as Chrysophyllus, golden-leaf.

Cicatri'cula—A little scar. Cicatrisa'tus—Marked by scars.

Ci'catrix—A scar; the impression left at the spot where an organ was articulated to some part of a plant, as the leaflets to the rhachis, the leaf to the stem.

Ci'liæ—Somewhat stiffish hairs, which form a fringe on the margin of an organ. Ciliaris, Ciliatus—Furnished with ciliæ, or eyelashed.

Cine'reous, Cinere'us—Ash-colour, the intermediate tint between pure white and black. *Cineraceus* implies it to be a little paler, and *Cinerasceus*, very pale, bordering on white.

Cin'gulum—A girdle; the neck of a plant.

Cinnabari'nus, Cinna'baris—Vermilion, scarlet, slightly tinged with yellow. (See *Polystictus cinnabarinus*, one of the most frequent fungi met with on old logs.)

Cinnamo'meus—Of a bright brown colour, formed from reddish-orange and grey.

Cir'cinate—Rolled inward from the summit towards the base like a crozier, or the young fronds of many ferns.

Circumcised—Applied to an apothecium which is separated from the thallus by a distinct rima or chink.

Circumscis'sile—A name given to a form of valvular dehiscence which occurs by a transverse separation, as in the common Pimpernel, *Anagallis.*

Cir'rhus—Synonym for "A tendril." Cirrhiferous — Bearing tendrils or claspers. (See the termination of the leaf of the common garden Pea.)

Cit'reus, Cit'rinus—Lemon colour, a pure yellow, very slightly tinged with grey.

Clado'des—These were formerly called leaves, but now theoretically believed to be abortive branches. Good examples will be found in the genus *Asparagus*; here they are usually clusters of flattened branchlets. In the genus *Ruscus*, or "Butcher's Broom," they are ovate, rigid, and spinescent, and bear the perianth and fruit upon their face or margin.

Clas'ses—The large divisions into which the Vegetable Kingdom is arranged.

Clath'rate—Latticed or perforated like a window, as the leaves of *Monstera deliciosa.*

Cla'va—A club. Clava'tus, Clavella'tus, Clavifor'mis, Clavillo'sus—Where any organ, slender at the base, gradually thickens towards the apex.

Claw (*Unguis*)—The stalk of a petal. (See the flowers of *Dianthus.*)

Cleis'tocarp—Ascocarp in which the asci and ascospores are formed inside a completely closed envelope, from which the ascospores escape by its final rupture.

Clos'ter, Clos'trum — Spindle-shaped, elongated cells, pointed at each end, and either cylindrical or fusiform, which enter largely into the composition of the woody parts of trees.

Clypea'tus, Clypea'striformis, Clypeifor'mis Clypeola'ris—Shield-shaped, from *clypeus*, a shield; *forma*, a shape.

Coacerva'tus—Heaped up, clustered.

Coadna'tus, Coaduna'tus—Cohering.

Coales'cens, Coa'litus—To grow together, cohering.

Coa'rcture, Coarctu'ra—Synonym for "The neck."

Cocci'neus—Red, with a slight admixture of yellow, scarlet, or crimson. (See *Salvia coccinea*, a common weed on rubbish-heaps about Brisbane.)

Coccum—Synonym for "Coccus."

Coc'cus, Coc'ci—One-seeded carpels, united in the pistil, but separating when ripe, and opening with elasticity by an internal longitudinal suture. The fruit of the Castor oil, *Ricinus*, is a good example.

Cochlear (*Cochlea'ris*, belonging to a spoon)—Applied to an æstivation where one part of the perianth is helmet-shaped, larger than the rest, which it entirely surrounds.

Cochleate, Cochlea'tus—Spirally twisted, like a snail-shell. Of this form, the fruit of the Medic Burr is a good illustration.

Coco'nut Fibre Dust—When bought it will be found a mixture of hair-like fibres and reddish dust. It is this dust which is so excellent a material for mixing with the soils to be used for potting ferns, and, indeed, most plants. For striking cuttings it is most useful. A portion of the more fibrous parts is found to be a very useful material for placing over the crocks used for pot-drainage, to prevent the soil from going down and clogging up the drainage.

Codio'phyllus—Where the leaf is covered with a woolly pubescence.

Cœn'obium—A community of a definite number of individuals united in one body.

Cœn'osus—Growing in mud or miry places.

Coher'ent and Adherent—These two terms convey nearly the same meaning; practically, however, it has been found more convenient to restrict *cohesion* to the union of parts of the same whorl, and *adhesion* to the union of parts of different whorls of a flower.

Co'hort, Co'hors—A group of plants formed by uniting several orders together.

Co'leus—The well-known garden plant is so called because the filaments in the flower are united at the base and thus form a sheath.

Coleorhi'za—The sheath at the base of the radicle of monocotyledons.

Col'lum or Neck—The plane between the stem and root.

Co'lum—Synonym for "Placenta."

Columel'la, Columnel'la—A persistent central axis, round which the carpels of some fruits are arranged, as in the Geranium.

Co'mose, Coma'tus—Furnished with hairs at the end, as some seeds.

Co'ma—Also applied to the aggregation of branches forming the head of a tree, as well as the tuft of bracteæ or barren flowers, which are sometimes formed at the crown of an inflorescence, as in French Lavender, *Lavendula Stœchas*.

Commissu'ra—The inner surface of each of the two parts (mericarps) into which the fruit of the Umbelliferæ is divisible.

Complana'tus—Made even or smooth; synonym for "Compressus." (See stems of *Acacia complanata*.)

Complex'ivus—When a leaf in vernation is folded over another, both at the sides and apex,

Concat'enate—United in a chain-like manner.

Con'cave, Con'cavus—Hollow; applied to any surface with a curvilinear depression, or hollow formed without angles.

Concentrically—In rings, with a common centre.

Concepta'culum—Double follicle; a two-celled, many-seeded superior fruit, separating into two portions, the seeds of which do not adhere to marginal placentæ, as in the folliculus, to which this closely approaches, but separate from their placentæ, and lie loose in the cavity of each cell. (For example see *Asclepias*.)

Concol'orous—Similar in colour.

Con'crete—Growing together.

Cone', Co'nus—A dense aggregation of scale-like carpels, arranged symmetrically round an axis, as in the Pine family.

Con'fluent—Running into each other, as the sori in *Polypodium confluens*.

Con'globate—In rounded clusters.

Con'jugate, Conjuga'tus—A pinnate leaf, composed of a single pair of leaflets.

Connate', Conna'tus—Where the bases of two opposite leaves are united round the stem, so that this appears to pass through them.

Connec'tive, Connecti'vum—A portion of the stamen, distinct from the filament, which connects the cells of the anthers together.

Conni'vent—When nearer together at the summit than at the base. (See flowers of *Sterculia quadrifida*, the calyx-lobes of which are connivent and cohere at their tips over the centre of the flower.)

Con'oid—Cone-like.

Contort'ed—In æstivation, when one edge of a petal or sepal is covered, and the other free or exposed; twisted.

Con'volute—In æstivation or vernation, when one part is rolled up within another.

Cor'alloid—Coral-like.

Coraci'nus—Deep shining black, like a raven.

Cor'date, Corda'tus, Cordifor'mis—Shaped like the figure of a heart on cards, the point of attachment being at the broader end. (See the leaves of *Manettia cordifolia*, a lovely climber with red flowers.)

Coria'ceous, Coria'ceus — Leathery in texture. (See leaves of the Purple Guava.)

Corm, Cor'mus—A fleshy solid underground bulb-like stem, usually annual. A tuberous rootstock. (See what is called a bulb of *Gladiolus*.)

Cor'neous, Cor'neus—Horny, or resembling horn in consistency, as the albumen of many seeds. The Date (*Phœnix*), for instance, is a good example.

Cornicula'tus—Horned. (See the fruit of *Oxalis corniculata*, or Sour-grass.)

Corni'gera—Horn-bearing, as the corolla of *Datura cornigery*, Trumpet-flower.

Cor'nute—Shaped like a horn.

COROL'LA—The floral whorl next in succession within the calyx. It is composed of subordinate parts termed petals, which are either free, or more or less united together into a tube. It is generally more highly coloured than the calyx; but in many plants it is entirely wanting, and then the calyx frequently assumes the more usual aspect of the corolla, as in *Clematis.*

COROL'LIFLO'RÆ—All plants with a monopetalous corolla not attached to the calyx, the stamens being inserted into the corolla, and with superior ovary.

CORO'NA—An aggregation of appendages, free or united, seated upon the inner surface of the perianth, as the tubular appendage in *Narcissus,* and the rings of coloured thread-like appendage in *Passiflora.*

CORRUGA'TIVA, CORRUGA'TUS, CORRUGATE.—Crumpled, wrinkled.

COR'TEX—The rind or bark. **CORTICA'TUS**—Furnished with a rind or bark.

CORTI'NA—That portion of the veil which adheres to the pileus of some agarics in fragments.

COR'YMB, CORYM'BUS—Where the pedicels in the inflorescence originate at different parts along the main axis, and elevate all the flowers to about the same height, the inferior pedicels being consequently longer than the upper ones.

COSMET'IC—Beautifying.

COS'TA—A rib; often applied to the midrib of a leaf. **COS'TATE.**—Ribbed; distinctly raised parallel lines.

COTYL'EDON, COTYLE'DON—A part of the embryo, representing a first leaf, in the modified form in which it appears in the seed. Their observation is of great importance, for it is chiefly upon the distinction between the embryo with one or with two cotyledons that are founded the two great classes of Phænogamous plants, *Monocotyledons* and *Dicotyledons.*

CRAS'SUS—Thick and fleshy.

CRATE'RIFORM—Goblet-shaped.

CREMOCAR'PIUM—An inferior fruit, indehiscent, and having from 2 to 5 cells, cells 1-seeded, dry, perfectly close at all times; when ripe separating from a common axis. The fruits Umbelliferæ are examples.

CRENATE'.—Having rounded teeth. (See leaves of *Lantana camara.*)

CRETA'CEOUS—Chalk-white.

CRI'NITUS—Furnished with tufts of hairs.

CRISTA'TUS—Crested. **CRISTATE**—Having a crest-like appendage.

CRO'CEUS—Saffron-coloured. (See flowers of *Eschscholtzia crocea,* one of the Californian poppies.)

CRUCIFE'RÆ (Cross-bearers)—The name of the order containing the Cabbage, Mustard, Stocks, Wallflowers, &c. Four-stalked petals, placed crosswise, occur in this order and in no other. The presence of six stamens, two short and four long, is another characteristic.

CRU'CIFORM, CRUCIFOR'MIS—Where any parts of the same horizontal plane are disposed in the form of a cross, as the petals of Cruciferæ. The Cabbage or Turnip are good examples.

CRUEN'TUS, CRUENTA'TUS—Marked with red blotches; also where any part is wholly red.

CRUSTA'CEOUS, CRUSTA'CEUS, CRUSTA'TUS—Hard and brittle, as are many Lichens.

CU'CULLATE, CUCULLA'RIS, CUCULLA'TUS, CUCULLIFORM (*Cucul'lus,* a hood; *forma,* shape)—Where a plane surface, as of a leaf, petal, &c., is rolled up like a cornet of paper; for instance, like the spathe of an *Arum.*

CULM, CUL'MUS—A name given to the stems of Grasses and Sedges.

CUL'TRATE, CULTRA'TUS, CULTRIFOR'MIS—Approaching the shape of a knife-blade.

CU'NEATE, CUNEA'RIUS, CUNEA'TUS, CUNEIFOR'MIS—Wedge-formed.

CU'PULAR—Cup-shaped. **CUPULIFORM**—Like a little cup.

CURRANTS, SULTANAS, RAISINS, DRYING OF—*Currants.*—Sultanas, which are almost identical with currants, will take about eight days to dry, require no dipping, and should be turned about the third day. Currants dry in a somewhat shorter time, but all depends upon the weather and the condition of the fruit. In all cases the fruit for raisins or currants should be perfectly ripe, without the slightest suspicion of acidity about it. Probably broad paling trays are best. Three palings will make a tray, and two pieces of 3 x 2 in. deal batten will serve at the ends to nail the palings to. Three to four tons of green fruit will make one ton of dry product. Irrigated fruit gives a lesser weight than that which is raised without irrigation. Grapes raised upon rich sandy calcareous land will be large, heavy, and meaty. *Raisins.*—Muscats require an exposure to the full heat of the sun for about fourteen days, and should be turned over about the fifth or sixth day. If to be dried in bunches, the grapes must not be dipped in boiling lye, because the bloom will be destroyed. Pudding raisins may be dipped for fifteen seconds in boiling lye made with 1 lb. of washing soda to ten gallons of water, and then rinsed for ten seconds in hot clean water to remove the soda. This will cause minute cracks all over the berries, and they will dry in less than a fortnight. The fruit should not dry up till it becomes brittle, but should be somewhat "meaty." When dry enough, and before being "sweated," the berries should be run through the "stemmer," and next through the winnower to take out the stems. Then the fruit has to be put in heaps to sweat, which will take out any excess moisture from berries not dry enough, and will moisten those that are too dry.

CUS'PIDATE, CUSPIDA'TUS—Pointed; gradually tapering into a sharp stiff point.

Cuta'neous—Relating to the skin.

Cu'ticle—Synonymous with "Epidermis," the scarf skin.

Cuttings—In preparing these, as a rule it is advisable to cut close below a knot or joint at the base, because roots are in most cases formed most readily from thence. This, however, is not always the case, as will be seen by looking at the prostrate stems of verbenas and similar plants during very wet weather; here roots will be observed coming out all along the internodes, thus it will be quite immaterial where the incision be made. Cuttings of succulent plants should not be planted immediately after being cut; it is better to allow time for the wound to dry; if the day be dry, an hour will do this, if wet allow a longer time.

Cya'neus—A bright or pure blue. (See the flowers of *Commelyna cyanea*, a plant commonly met with upon wet grounds; one of the Spider-worts.)

Cyathifor'mis—Cup-shaped, like a reversed cone.

Cyclo'sis—The partial circulation observable in the milky juices of certain plants.

Cylin'dric, Cylin'dricus — Approaching closely the form of a cylinder. (See the stem of a Wheat plant.)

Cyma'tium (from *Kumation*, a little wave) —Synonym for "Apothecium."

Cymbæfor'mis, Cymbifor'mis — Boat-shaped.

Cyme, or Cy'mose—When branched and centrifugal. It is a centrifugal panicle, and is often corymbose. The central flowers open first. The lateral branches successively developed are usually forked or opposite (dichotomous or trichotomous), but sometimes after the first forking the branches are no longer divided, but produce a succession of pedicels on their upper side forming apparently unilateral centripetal racemes; whereas if attentively examined, it will be found that each pedicel is at first terminal but becomes lateral by the development of one outer branch only, immediately under the pedicel. Such branches, when in bud, are generally rolled back at the top, like the tail of a scorpion, and are thence called *scorpio'id*. (See inflorescence of *Callicarpa pedunculata*, a common shrub in Queensland scrub borders, with pretty purple drupes about 1½ lines in diameter.)

Cynarrho'dum—A fruit composed of several free, hard, and indehiscent ovaries, enveloped by, but not united to, the fleshy tube of the calyx, as in Roses.

Cy'phellate — Having minute sunken roundish cup-like spots on the under surface of the thallus of Stictei. Cyphellæ, minute urceolate excavations on the under surface of the thallus.

Cyp'sela, Cyp'sella — A synonym of "Achenium;" where that term is applied to the fruit resulting from an inferior ovarium, as in the Compositæ.

Cysti'dia—Sacs containing spores.

Cy'toblast—A cell germ.

Cytoblas'tema—Protoplasm.

Dacryoi'deus—Resembling a tear; applied to a pear-like fruit, oblong and rounded at one end, and pointed at the other.

Dactylo'sus—Oblong and nearly cylindric, resembling a finger, or attached like the finger of the human hand. (See the inflorescence of the common Couch Grass, *Cynodon dactylon*.)

Dæ'dalous, Dæda'leus—Where the broad apex of a leaf, without being strictly truncate, is irregularly jagged. Derived from "*dædalus*," artificial. (See the apex of the leaf of *Xerotes longifolia*.)

Dah'lias—The four classes into which Dahlias are divided by the Florist are Show, Fancy, Bouquet or Pompone, and Single-flowered. Show Dahlias are all double, and require to have large flowers of the most perfect form to be considered good. Selfs and pale-coloured flowers, edged or tipped with a darker colour, are included under Show varieties. Flowers of a similar size, but having florets dark-coloured at the base, and tipped or striped with a paler colour or white, are known as Fancy varieties. The Bouquet or Pompone, also those sometimes termed the Bedding section, have double flowers of a much smaller size; various colours are included, and all are invariably very pretty; the habit is dwarf and compact, constituting these the best for bedding purposes, and the flowers are most useful for cutting, when double ones are required. The Single-flowered varieties are very popular, and are amongst the most beautiful and useful subjects cut flowers.—*Dict. of Gard.*

Damping Off—This term is applied to the premature decay of the leaves, flowers, or stems of plants. Its effects are most marked on young and tender seedlings, when crowded together, or placed under unsuitable atmospheric conditions. Sometimes the cause may be traced to excess of moisture that may be suspended in the air or applied to the roots. Damping off amongst cuttings is often caused by allowing them to become dry, and then suddenly applying too much water. The water is generally blamed when the actual cause is drought, and the sudden change subsequently caused by the water. A temperature in a glass house or propagating frame lower than that outside in either case will cause damping by the condensation of water on all parts of the plants as they become colder, like the house. Raise the temperature, and the moisture becomes suspended. Immediately damping is detected amongst tender seedlings, they should be separated and placed out singly in fresh soil. This will invariably check it, but the operation is best performed before damping begins. Other causes, some unknown, affect different plants, and bring about their destruction in this way; but the primary ones are those here indicated.—*Dict. of Gard.*

DASYPHYL'LUS—Where the leaves are either densely aggregated, or else covered with close woolly hairs.

DEALBA'TUS—Covered with a greyish-white powder, whitened. (See the under side of the fronds of the Silver Tree Fern of New Zealand, *Cyathea dealbata.*)

DECA or DECEM—Ten in composition.

DECI'DUOUS—Applied to the leaf, it designates those trees and shrubs which shed all their leaves annually at the same period, so that their branches become bare. Applied to other organs, it means that these fall off sooner or later, after their functions have been performed, whilst the other parts remain, or are persistent. The leaves of the Peach are deciduous. The foliage of many Queensland trees are rather semi-deciduous than deciduous, for there is no certainty of the leaves falling; they at times are retained upon the trees until long after the young growth has appeared.

DE'CLINATE—Where an organ or set of organs is bent or inclines towards one side. (See *Carex declinata.*)

DECOC'TION—A preparation or digest by boiling water.

DECOM'POUND—Having many divisions. (See fronds of *Aspidium decompositum.*)

DECO'RUS—Adorned or beautiful, as *Indigofera decora.*

DECUM'BENT, DECUM'BENS — Applied to stems when they recline upon the surface of the earth, but have a tendency to rise again towards their extremities.

DECUR'RENT, DECURRENS — Continued downwards, as the blade of the leaves of some plants, forming a wing-like appendage to the stem. (See *Acacia decurrens*, the Green Wattle, the bark of which is so largely used for tanning.)

DECUR'SIVELY-PINNATE—A form of pinnatified leaf. (See, for example, *Melianthus.*)

DECUS'SATE, DECUSSA'TUS—Synonym for "Brachiate" but usually applied to leaves when they are arranged in alternating pairs, forming four lines.

DE'FINITE—Applied to the stamens when they do not exceed twelve in number and are constant in the same species.

DEFLEX'ED, DEFLEXUS—Bending gradually downward through the whole length.

DEHIS'CENCE—The manner in which an organ, closed at first, ultimately bursts; but more especially applied where the bursting is with regularity along particular lines of suture, as in the anthers for discharge of the pollen; in many pericarps for the escape of the seeds.

DELIQUES'CENT—Applied to certain fungi which soon dissolve, and to the branches of inflorescence when all trace of the principal axis is lost in the ramifications.

DEL'TOID, DELTOI'DENS—Resembling the Greek letter Δ, applied to succulent leaves, whose transverse sections have a resemblance to a Δ.

DEMIS'SUS—Hanging down.

DEMUL'CENT—Having the property of softening anything. This property is taken advantage of for forming the leaves of the common Mallow into poultices.

DENDRI'TICUS, DENDROI'DES—In form resembling a tree.

DENDRO'LOGY—That part of botany which treats of trees.

DEN'TATE, DENTATUS—Toothed, having triangular teeth. DENTATE-CRENATE—Having rounded or pointed teeth. DENTATE-SERRATE—Having tapering, sharp-pointed teeth projecting or curved towards the tip of a leaf like the teeth of a saw.

DEN'TRIFICE—Powder made to scour the teeth. The gum of some Acaceas are used for this purpose.

DENUDA'TUS—Made naked.

DEPANPERA'TUS—Impoverished, starved.

DEPEN'DENS—Hanging down, pendent.

DEPLA'NATE—Flattened or expanded.

DEPRES'SUS—Where the longitudinal extension is much smaller than the transverse. Flattened vertically.

DETER'MINATE—An inflorescence is said to be terminal or determinate when the main stem and principal branches end in a flower or inflorescence.

DEUS'TUS—Having the appearance of being scorched. (See *Mesomelœna deusta.*)

DEX'TRINE, or VEGETABLE MUCILAGE—A gummy substance, between mucilage and starch, and is one of the principal organized cell-contents.

DEXTROR'SUM—Towards the right hand; applied to a spiral whose successive convolutions would appear to a person, placid in its axis, to rise from left to right. An example is furnished by the Hop plant, *Humulus lupulus.*

DI, in compounds, signifies two. Thus, DIADELPHUS, where the stamens are united into two distinct bundles; DIANDRUS, a flower containing only two stamens; DICHOTOMUS, where any part forks or subdivides into two branches, and each of these again into two others.

DI'ALYPETALOUS—A modern word sometimes used for the better known "Polypetalous."

DIANTH'US CARYOPHYLLUS — The parent of those lovely flowers, Carnations, Picotee, Clove.

The English Florist classifies these flowers thus:—*Bizarres*—Flowers with white ground, rayed or striped from the centre to the circumference, with bands of two or three clearly defined different colours or different tints of the same colour. *Flakes*—These have also a white ground, but they are only striped or streaked with one colour. *Picotees*—Instead of having their petals longitudinally striped, have them bordered with a different colour from the white or yellow round, sometimes with the limb spotted or marked with the same or a different colour. *French Fancies*—No importance is attached to the presence or absence of fringe to the end of petals.

The French Florist arrange as—*Grenadins*—Flowers of medium size, single or double, fringed, unicoloured, deep purple, violet, or verging upon chestnut brown, all very fragrant. *Flamands*—Flowers large, more or less double, very round, raised or convex in the centre; petals quite entire, unicoloured or banded longitudinally with two or three distinctly defined colours or tints upon a white ground. *Fancies*—These are subdivided into *German* and *English*. Petals, either toothed or not, but marked or striped with two or three different colours upon a yellow ground of various shades in the former, and wholly white in the latter.

Another writer says—The characteristics of a good Carnation are as follow:—The pod (*i.e.*, calyx) should be long, as then the flower is not liable to burst it, as is the case when it is short. The flower should be quite circular, and rising up gradually towards the centre, so as to form half a ball. The outer or guard petals should be large, and few in number, rising slightly above the calyx, then spreading horizontally; and the other petals should be regularly disposed on them, nearly flat, and diminish in size towards the centre. The texture of the petals should be thick and wax-like, and the markings distinct and clear, the ground a pure white, any flushing or running of the colour being a decided disqualification. *Classes*—There are three distinct classes, viz.—Bizarres, Flakes, and Selfs. The Bizarres have a clear ground, variously marked and flaked with two or three colours; of these there are crimson, scarlet, and pink-purple varieties, each characterised by the distinguishing colours predominating. Flakes have a pure ground, flaked with one colour, of which there are scarlet, purple, and rose varieties. Selfs should be one coloured, in any shade, but the more defined, the more effective they are.—*Dict. of Gard.*

DIAPH'ANOUS—Nearly transparent. (See the pretty little fern, *Adiantum diaphanum.*)

DIAPHORE'TIC—Promoting perspiration. A decoction made of the flowers of the European Elder has been made for this purpose.

DIARRHŒ'A—A purging or looseness of the bowels. Many of our native plants are used as a remedy in this complaint, particularly the Eucalypt gum.

DICHLAMYD'EOUS—When the perianth is double, both calyx and corolla being present and distinct.

DICHOG'AMOUS PLANTS—Those in which the stigma is not ripe at the same time as the anther is. These, again, may be — (*a*) Protandrous — *Dichogamia androgyna*, Sprengel, in which the anthers are ripe before the stigma; (*b*) Protogynous—*Dichogamia gynandra*, Sprengel, in which the stigma is ripe before the anther.

DICLE'SIUM—A fruit composed of an indehiscent one-seeded pericarp, invested by a persistent and indurated perianth. For examples see Marvel of Peru (*Mirabilis*), *Spinacia* and *Salsola.*

DIOLI'NIS—Having the male and female organs in different flowers

DICOTYLEDONS'—The name of the first of the two great classes of phænogamous plants. The few most constant characters which separate the Dicotyledons from Monocotyledons are considered to be the following:—Stem, when perennial, consisting of a pith in the centre, of one or more concentric circles of woody tissue, and of the bark on the outside. Embryo with two or more cotyledons, the young stem in germination proceeding from between the two lobes of the embryo or from a notch at its summit.

DI'DYMUS—Double or twin. (See the fruit of *Senebiera didyma*, the weed known as Wart Cress.)

DIDYNA'MUS—Where the stamens are four and arranged thus—two longer than the other two.

DIFFLU'ENT—Readily dissolving.

DIFFOR'MIS—Having an unusual shape.

DIFFRACT'—Broken into distinct areolæ, separated by chinks.

DIFFUSE'—Spreading widely, horizontally, and irregularly. (See *Boerhaavia diffusa.*)

DIGITATE', **DIGITA'TUS**—Applied to a simple leaf, where the lobes are very narrow, deeply cut, and all extend nearly to the base of the limb, imitating the fingers of the human hand. (See the inflorescence of Couch-grass.)

DIGY'NUS—Possessing two distinct pistils, or a pistil with two distinct styles; or with two distinct stigmas.

DILA'TED, **DILATA'TUS**—Expanding into a lamina.

DIME'ROUS and **TRI-TETRA-PENTA-TO POLYMEROUS**, signifies that the flowers are symmetrical and have 2, 3, 4, 5, or an indefinite number of parts in each whorl.

DIMID'IATE, **DIMIDIA'TUS**—Halved, where partial imperfection seems to exist, as in a stamen whose anther has only one lobe; a leaf or leaflet whose limb is fully developed on one side of the midrib, and scarcely at all on the other.

DIMOR'PHOUS, **DIMOR'PHUS** — Where similar parts of the same plant assume different shapes, as *Lindsœa dimorpha.*

DIŒ'CIOUS, **DIOICOUS** (from the Greek, *dis* twice, and *oikos* a house.)—Bearing the male and female flowers on distinct plants, as the Date Palm, *Phœnix dactylifera.*

DIPLO'TEGIS, **DIPLO'TEGIA**, **DIPLO'TEGIUM**—A dry fruit, formed as the capsule, but from being "inferior" is also invested by the persistent calyx. For example, fruit of *Lobelia*, the Tea-tree (*Leptospermum*), *Eucalyptus*, &c.

Dip'terous, Dip'terus — Having two membranous expansions termed wings.

Disciflo'ræ (2nd Series of Polypetalæ)—Forus usually thickened or expanded into a disk, either free or adnate to the ovary, or to the calyx, or to both, rarely reduced to glands, or wanting. Stamens as many, or twice as many, as petals, or fewer. Ovary superior or partially immersed in the disk, divided into cells with axile placentas, or the carpels distinct. (Stamens indefinite in a very few exceptional species. Ovary inferior or enclosed in the calyx-tube in most Rhamneæ; 1-celled in some Olacineæ.)

Discoid', Discoi'dal—A round, somewhat thickened lamina, the margins of which are also rounded. Also used to designate a large spot of colour surrounded by some other colour. (See the seeds of *Nux-vomica.*)

Disk or Disc—Certain fleshy expansions between the stamens and pistil; an enlargement of the receptacle which occur in some flowers. The usual forms cup-like (cupular), or flat like a quoit, or cushion-like (pulvinate). It may be entire, toothed or lobed, or divided into quite separate parts, when these parts are often spoken of as glands.

Dissec'tus—Where the segments, as in some leaves, are very numerous, and deeply cut, as in *Geranium dissectum.*

Dissep'iments—The partitions of an ovary or fruit.

Dissi'liens—Bursting asunder with elasticity, as some seed-vessels, particularly those of Euphorbiaceæ.

Dissim'ilar—Unlike, when similar organs assume different forms in the same individual, like the anther of *Cassia.*

Dis'tichous, Dis'tichus—Arranged in two rows, on opposite sides of a common axis. (See the leaves upon the branchlets of the Bald Cypress, *Taxodium distichum.*)

Diuret'ic—Plants having the power of promoting an increased discharge of urine, as Dandelion, Parsley, &c.

Diur'nus—This term is given to flowers which endure but for one day.

Diva'ricate—Spreading irregularly in various directions.

Diverg'ing, Divergens—When similar parts, approximating at their bases, incline away from each other towards their extremities.

Diversifo'lius—Having leaves of two or more shapes.

Dodeca'gynous — Provided with twelve styles or stigmas.

Dodecan'drous—Provided with twelve stamens.

Dola'briform, Dolabra'tus, Dolabrifor'mis—Axe-shaped.

Dor'sal—On the back. **Dorsum**—The back. **Dorsiferus**—Where the fructification is borne upon the back, as in a large number of ferns.

Dropping of the Petals of Pelargonium Flowers—To prevent this during transit to exhibition, it is recommended that a small drop of gum be placed at the base of each petal with a small brush, after which, if the flowers are carefully packed, they will most likely carry safely.

Drupa'ceous, Drupa'ceus—Either having the character of a drupe, or resembling one in outward appearance.

Drupe, Dru'pa—A fruit in which the pericarp, when ripe, consists of two distinct portions—an outer succulent one called the Sarcocarp (covered like the berry by a skin or epicarp), and an inner dry endocarp called the Rutamen, which is either cartilaginous (of the consistence of parchment) or hard and woody. In the latter case it is commonly called a stone, and the drupe a stone fruit. When the putamen consists of several distinct stones or nuts, each enclosing a seed, they are called pyrenes, or sometimes kernels. The fruit of the coco-nut, *Cocos nucifera*, is a drupe with a fibrous (when dry) exocarp. In Pandanus the drupes are crowded together and form a cone-like head.

Duct, Duc'tus—A membranous tube, one of those which constitute the vascular texture; with or without markings on the surface, but not accompanied in a spirally coiled fibre, as the Tracheæ.

Dul'cis — Sweet, agreeable, as the peduncles of *Hovenia dulcis.*

Dumeto'sus — Having the character or appearance of a bush.

Du'plex—Double. Double flowers are in most cases an accidental deformity or monster in which the ordinary number of petals is multiplied by the conversion of stamens, sepals, or even carpels into petals, by the division of ordinary petals, or simply by the addition of supernumerary.

Dura'men—The heart-wood or centre of Exogenous trees, and the outer part of the stem of Endogens.

Duriu'sculus — Somewhat hard, stiff, or rigid.

Dys'entery—A disease causing a discharge of mucus and blood from the bowels. In America cotton-seed tea is given as a remedy.

Dysophyl'lus—Leaves fœtid. **Dysox'ylon**—The wood having a bad smell.

Dyspep'sia—Difficulty of digestion. Pawpaw juice is considered a remedy.

Dys'ury—A difficulty of voiding the urine.

E, Ex, in compounds, denotes absence, as **Ebracteate, Eglandular, Exalbuminous.**

Ebori'nus, Eburneus—White like ivory; white, tinged with yellow, and with a tendency to a wavy lustre.

Ebractea'tus—Without bracts.

Ecblas'tesis — The production of buds within flowers, or on inflorescences, in consequence of monstrous development.

Echina'tus — Set with prickles, bristly. Applied to surfaces which are covered with bristles, or with straight prickles.

Echinula'tus—When rough with small bristles, prickles, or tubercles. (See the fruit of *Commersonia echinata*, called "Dim" by the Maroochie natives, and from the bark of which they make their fishing-nets.)

E'dulis—Edible. For instance, *Canna edulis* was so called because in Peru the rootstock was used as we use potatoes.

Effu'sus, Expansus—Widely spreading. (See *Panicum effusum*, a very common Queensland grass.)

Ela'ter—Spiral fibres in the spore-cases of Hepaticæ.

Ela'tus—Tall, as the She-pine, *Podocarpus elata.*

Ellip'tical, Ellip'ticus — Approaching the form of an ellipse. It may be considered as an oval rounded at the ends, or as an oblong widened in its smaller diameter. The leaves of *Lagerstrœmia indica* are often elliptic.

Elon'gated, Elongatus—When any part of an organ is in any way remarkable for its length in comparison with its breadth.

Emar'ginate, Emarginatus — Slightly notched at the summit.

Em'bryo—The rudiment of a plant contained in the seed. It consists of the Radicle or base of the future root, one or more Cotyledons or future seed-leaves, and the Plumule or future bud within the base of the Cotyledons. In some seeds, especially where there is no albumen, these several parts are very conspicuous; in others they are very difficult to distinguish until the seed begins to germinate.

Emet'ic—Inducing to vomit, as the seeds of the Physic-nut, *Jatropha curcas.*

Emer'sus—Where the upper extremities of a plant, or leaf, rise above the water, the rest continuing submerged.

Emmen'agogue—Any medicine that promotes menstruation. The common Rue was at one time highly extolled as as an emmenagogue.

Emol'lient—Softening, as many plants of the Mallow family.

Emul'sions—Medicines made of bruised oily seeds and water.

Encys'ted—Enclosed in a cyst or bladder.

Endeco'gynous, Endeca'gynus — Possessing eleven pistils. **Endecasidrous, Endecandrus** — Possessing eleven stamens.

Endem'ic, Endem'icus—When the geographical range of any species, or natural group, is confined within the limit of a particular region.

En'docarp, Endocar'pium — The inner coat of the pericarp; it may be membranous, or hard and bony, as in stone fruit.

Endocarp'oid—Applied to apothecia which are sunk or innate in the substance of the thallus.

En'dochrome—Cell contents. Colouring matter of cells.

Endo'genous, Endo'genus—Possessing the internal structure of Monocotyledons—viz., the woody system is in separate small bundles or fibres running through the cellular system without apparent order, and there is usually no distinct central pith, nor outer separable bark.

Endophy'tal—Growing within plants.

Endorhi'zous, Endorhi'zus—Used synonymously with "Monocotyledonous"; because in the germination, the radicle, instead of elongating, is burst at its apex or sides by secondary radicles or fibres, which are then protruded through the openings.

Endosmose', Endosmo'sis—The transmission of the ascending crude sap appears to take place chiefly through the elongated cells associated with the vascular tissue, passing from one cell to another by a process but little understood, but known by the name of *endosmose.*

Endosperm', Endosper'mium—Synonym for "Perisperm" or "Albumen." **Endosporium, Endospore** — The inner coating of a spore.

Endothe'cium—The inner lining of the anther-cells.

En'nea—Nine in composition, as **Enneagy'nia**, flowers with 9 free pistils, styles, or stigmas; **Ennean'dria**, having 9 stamens in each flower; **Enneape'talus**, having 9 petals.

Eno'dis—Where a stem, or other part, is without joints or knots.

En'siform—Sword-shaped. (See leaflets of *Lindsœa ensifolia.*)

Entire'—Having an unbroken or undivided margin; in opposition to dentate, lobed, or divided.

Entodis'calis—Inserted, as some stamens within-side a disk.

Ephem'eral, Ephem'erous, Ephem'erus—Applied to flowers which expand for a few hours at most and then fade away Example, Evening Primrose.

Epi, in compounds, signifies upon.

E'picarp, Epicar'pium—The outer skin or coat of the pericarp, when ripened into a fruit.

Epider'mis, Epider'ma—A delicate membrane coating the surface of the various parts of plants, composed of flattened vesicles of the cellular tissue.

Epi'gynous, Epi'gynus (*i.e.*, upon the ovary)—When the disk bearing the petals is combined both with the base of the calyx-tube and the base outside of the ovary; either closing over the ovary so as only to leave a passage for the style, or leaving more or less of the top of the ovary free, but always adhering to it above the level of the insertion of the lowest ovule (except in a few cases where the ovules are absolutely suspended from the top of the cell). In epigynous flowers the ovary is described as *adherent* or *inferior*, the calyx as *adherent* or *superior*, the petals as *inserted on* or *above the* ovary. In some works, however, most epigynous flowers are included in the perigynous ones, and a very different meaning is given to the term *epigynous*; and there are a few cases where no positive distinction can be drawn between the epigynous and perigynous flowers, or again between the perigynous and hypogynous flowers. The epigynous disk is a name given either to the thickened summit of the ovary in epigynous flowers, or very rarely to the real disk or enlargement of the receptacle closing over the ovary.

EPIPHLÆ'ODAL—Existing superficially on the epidermis of bark.

EP'IPHRAGM — In Nidularieæ, a delicate membrane closing the cup-like sporophore.

EPIPH'YLLOUS, EPIPHYL'LUS—Either growing upon or inserted on the leaf, as many Fungi and Lichens. In the case of the Cactus called *Epiphyllum*, the genus is only so named from the flattened branches having somewhat the appearance of leaves.

EPIPHYTE', EPI'PHYTON—Plants which attach themselves to others for support, but derive no nutriment from them. They simply grow upon other plants without penetrating into their tissue. (See the native species of *Dendrobiums*, Stag's-horn Ferns, &c.)

EPISPERM', EPISPERMIUM—The seed-cover; used synonymously with "Lorica," "Perisperm," and "Spermodermis."

EPISPORE'—The outer integument of a spore.

EPISTO'MEUS—Spigot-shaped.

EPITHAL'LUS—Cortical layer of Lichens.

EPITHE'CIUM—The expanded coloured disk of the apothecium.

EPIZ'OIC—Growing upon animals.

EQUINOC'TIAL—Plants whose flowers expand and close at particular hours of the day.

E'QUITANT, EQUITATIVUS—A form of vernation, in which the leaves are folded forwards longitudinally on the midrib, so that their edges meet, and each embraces the one which is placed next within it. (See *Oberonia iridifolia.*)

ER'EMOS—Solitary, as EREMOPHILA, a lover of the desert; EREMOSTACHYS, a solitary or deserted spike.

ERICE'TINUS—Growing on heaths.

ERI'NUS—Prickly, rough.

ERINEUM—A diseased state of the tissue, at one time believed to be produced by a fungus. The trees of *Mallotus philippinensis* frequently have their young shoots deformed by this disease.

ERIO'PHORUS—Bearing wool, or covered with woolly or downy pubescence.

EROSE'—Gnawed. ERODED—Having the margin irregularly toothed as if bitten by an animal.

ER'RHINE—Promoting a discharge of mucus from the nostrils.

ERUM'PENT—Applies to certain fungi whose fructification bursts through the texture of leaves, &c.

ES'CULENT, ESCULENTUS—Good for food. Example, *Hibiscus esculentus*, the Ochro or Gombo.

ESSEN'TIAL OILS—There is no reason why many such plants, as Lavender, Aniseed, Caraway, the Mints, &c., as well as a number of the indigenous plants, should not be grown in this colony for the sake of their oils. Flower-farming is an industry in the neighbouring colonies, and from samples lately tested it is reported that 100 lb. of the Peppermint plant produced 4 oz. of oil, and 1 oz. of oil from 30 lb. of Spearmint; 3 oz. of oil was also obtained from 20 lb. of the stems and leaves of *Lavendula vera.* Our Brisbane Pennyroyal (*Mentha saturcioides*) has been known to yield, from 100 lb. of the plant, 7 oz. of oil, equal to the best peppermint. Of our trees those which have yielded oil of the best quality, as well as the greatest quantity, are *Eucalyptus hœmastoma*, *E. microcorys*, *E. maculata*, var. *citriodora*, *E. Staigeriana*, *Melaleuca leucadendron*, *M. linariifolia*, and *Backhousia citriodora.*

ESU'RIALE—Appeasing hunger, as the fruits of *Solanum esuriale*, by the natives.

ETÆ'RIO, ETA'IRIUM—A fruit composed of several distinct one-seeded pericarps (akenia and caryopses of different anthers, or drupellæ), arranged upon an elevated receptacle or torus, which may be either dry or fleshy. For examples see *Ranunculus* (Buttercup), *Fragaria* (Strawberry), and *Rubus* (Blackberry or Raspberry).

ETIOLA'TED, ETIOLA'TUS — The effect of blanching the leaves, and lengthening of the stem when a plant is suffered to grow in the dark, or in a much obscured situation.

EVANES'CENT, EVANES'CENS—Vanishing; applies to veins which do not reach the margin.

EX, in composition, signifies without; as exalbuminous seeds, as the common garden Been and Pea, which contain an embryo only.

EXASPERA'TUS—Rough. (See cap of *Lentinus exasperatus.*)

EXCIP'ULUM—Receptacle of a Lichen.

EXCUR'RENT, EXCURRENS—Protruding beyond the usual limits.

EXHALA'TION, EXHALA'TIS—A vital function by which the stomata are made to discharge a large portion (about two-thirds) of the water introduced by absorption through the spongioles.

EXI'GUUS—Very puny and pitiful. (See the small orchid, *Bulbophyllum exiguum.*)

EX'OGENS, EXO'GENÆ—Used synonymously with "Dicotyledons," because the stem of such plants have an exogenous structure, which consists of (1) pith, (2) medullary sheath, (3) wood, duramen, and alburnum, (4) medullary rays, (5) bark.

EXORHI'ZAL, EXORHIZUS—The peculiar mode in which the radicle of dicotyledons is developed in germination; elongating at once from the radicular extremity of the embryo, and not bursting through an outer coat, as in monocotyledons.

EXOSMOSE', EXOSMO'SIS—The effect opposed to Endosmose, referring to the current which passes from within outwards. EXOSPORIUM, EXOSPORE — The outer membrane of the coat of a spore.

EXOSTOME', EXOS'TOMA—The perforation in the primine or testa which, together with the endostome, completes the foramen.

Exosto'sis—A wart-like excresence, many of which are developed on the roots of leguminous plants.

Exothe'cium — The outer coat of the anther.

Exsculp'tus—Where there exists a small depression, as though a piece had been cut out. As in the seed of *Anchusa.*

Exsert'ed, Exsertus — When one part protrudes beyond another by which it is surrounded.

Extra-axilla'ris—When a bud, instead of being placed in the axil of the leaf, is developed above or on one side of it.

Extrorse', Extror'sus — When the slit through which the pollen escapes from the anther is towards the outside of the flower, and not, as is more usual, towards the pistil.

Faba—A bean. **Fabaceæ**—Synonym for "Leguminosæ."

Fa'cies—The general habit or appearance assumed by each particular species.

Facti'tious, Facti'tius—Artificial.

Facul'tative—Occasional, incidental.

Facul'tative Parasite—An organism which can and normally does go through the whole course of its development as a saprophyte, but which may also go through its development wholly or in part as a parasite.

Facul'tative Saprophyte—An organism which normally goes through the whole course of its development as a parasite, but which can at certain stages vegetate as a saprophyte.

Fæcula — The farinaceous matter which forms starch, &c.

Fal'cate, Falcarius, Falcatorius, Falciformis, Falcatus—These are terms which are applied to any part of a plant which is of a form somewhat like a boomerang, or sickle. (See phyllodia of *Acacia falcata.*)

Fal'lax—Deceitful, deceptive. Example, *Clerodendron fallax.*

Fam'ily, Familia — A synonym for "Order." The term "Family" is more frequently met with in the classification of Cryptogamic plants. For instance, in the Order Fungi, we find—Family I., Hymenomycetes; Order I., Agaricini: Family taking the first, and Order the second rank.

Farc'tus—Stuffed; used in contradistinction to "hollow" or "tubular."

Farina'ceus, Farinosus, Farinose—Mealy. When the indumentum is composed of excessively short, intricate white hairs, which readily come off, and are in appearance like meal or dust.

Fas'ciated, Fasciatus—When contiguous parts are unusually grafted and grown together, as some stems and branches, which assume a flattened instead of a rounded appearance. The Cockscomb is a good example; but the growth is very frequently met with in Queensland.

Fasci'cled, Fasci'culate, Fascicula'ris, Fascicula'tus—Where several similar parts originate at the same spot, and are collected, as it were, into a bundle.

Fasti'giate, Fastigiatus — Applied to branches when they are erect and close; or the outline of a tree, as the Lombardy Poplar, *Populus fastigiata.*

Faux—The throat.

Faveola'tus, Favo'sus, Favulo'sus—Resembling a honeycomb. Synonym for "Alveolate."

Feb'rifuge — Efficacious in moderating fever, as our Fever-bark.

Fec'ula—See "Fæcula."

Femi'neus (*Femina*, a woman)—Containing a pistil, but no stamens. Flowers are termed female or pistillate when there is a pistil, but either no stamens at all, or only imperfect ones. Pliny, when he said that "all trees and herbs are furnished with both sexes," had probably no idea as to any particular organs as the one male and the other female; indeed, it would seem that the first to point this out was Sir Thos. Mellington and Dr. Nehemiah Grew. The pollen from the anther must come in contact with surface of the stigma, or no fecundation can take place. It is possible, indeed, without this happening, that the fruit may increase in size, and that the seminal integuments may even be greatly developed, the elements of all these parts existing before the action of the pollen can take effect; but, under such circumstances, whatever may be the development of either the pericarp or the seeds, no embryo can be formed. (See "Pollen" and "Stigma.")

Fenestra'lis, Fenestra'tus—Supposed to resemble windows, being pierced with holes or openings of somewhat considerable dimensions. (See the leaves of *Monstera.*)

Fern Trees—Many persons complain of the difficulty they find in successfully removing these plants from their native habitat to their homes for cultivating in bush-house or sheltered garden spots. Of course, if the whole stem of the fern is desired there always will be a difficulty, but for good pot plants let them try the following mode:—Cut off all fronds, and then only bring home, say, from 6 in. to 2 ft. or so of the upper part of the trunk; plant this in a pot or tub in a compost suitable for ferns; place in a shady, damp, cool spot of the bush-house, and the result will be the possession of a handsome plant in a very short time.

Fero'ces—Thickly set with spines, as *Opuntia ferox.*

Ferru'ginous, Ferruginosus—Somewhat the colour of rusty iron; red mixed with much grey. (See the under side of the leaves of *Magnolia grandiflora.*)

Fer'tilis, Fertile—Producing fruit. Also capable of effecting the process of fertilisation, as the anthers when filled with pollen. In some works the terms *barren, fertile,* and *perfect* are also used respectively as synonyms of *male, female,* and *hermaphrodite.*

Fertiliza'tion—The reproductive function by which the action of the pollen renders the ovule fertile.

Fi'bre (*Fibra*, a filament)—Extremely fine and transparent hair-like condition of the elementary vegetable texture, which, together with membrane, enter into the composition of several forms of tissue. **Fi'bril, Fibril'la**—A fine ultimate hair-like subdivision of the root, or hair-like appendages to its branches. **Fi'brous, Fibro'sus**—Consisting of many thread-like portions, or possessing a structure separable into woody fibres, as the outer coat of the Coco-nut.

Fil'ament, Filamen'tum—The stalk which in many stamens supports the anther

Filamen'tosus—Composed of thread-like bodies, or bearing thread-like bodies on the margins of the foliage, like the *Yucca*, known as Adam's Needle-and-thread.

Filicol'ogy—That part of botany which treats of ferns.

Filifor'mis, Fil'iform—Cylindric; slender, like a thread.

Fimbria'tus — Fringed. (See flowers of *Artanema fimbriatum.*)

Fis'sus—Cleft, split.

Fis'tular, Fis'tulose, Fis'tulous, Fistulo'sus—Hollow, cylindric and hollow; and either with transverse diaphragms, as in the stems of some *funci*, or without them, as in the stems and leaves of the onion. The *culm* or stalk of wheat is usually fistular between nodes.

Flabel'liform, Flabellifor'mis, Flabella'tus—Shaped and sometimes plaited like a fan; rounded at the summit, and cuneate at the base. (See fronds of *Gleichenia flabellata*, the Fan fern.)

Flac'cid, Flac'cidus — Bending without elasticity, as some peduncles under the weight of flowers. (See leaves of the common Summer grass, *Panicum sanguinale.*)

Flagel'lum, Flagel'liform, Flagellifor'mis, Flagel'laris—Flexible, narrow, and tapering, like the thong of a whip.

Flam'meus—Flame colour, brilliant red. (See *Blandfordia flammea.*)

Flat China Peach—This tree was introduced into England from Java, and was propagated by Mr. Kirke under the name of "Java Peach." It was fruited by Mr. Braddick at Thames Ditton, and some of these were figured in the transactions of the Horticultural Society of London, vol. iv., 1822, under the name of "Flat Peach of China."

Flaves'cens, Fla'vus, Fla'vidus—Yellow, pale or pure yellow diluted. (See *Acacia flavescens*, a common Wattle of the North Queensland coast.)

Flex'ilis, Flexibilis—Capable of being bent, but returning with elasticity to its original state.

Flexuo'sus, Flexuo'se—Bending gently to and fro in opposite directions.

Floccose', Flocco'sus, Floccus—A lock of wool; when dense hairy pubescence falls off in little tufts. (See *Astrotriche floccosa.*)

Flo'ra—The aggregate of all the species of plants inhabiting a particular country.

Floribun'dus—Abounding with flowers. (See *Passiflora floribunda.*)

Flo'ral Leaves or **Leafy Bracts**—Generally the lower bracts or the upper leaves at the base of the flowering branches, intermediate in size, shape, or arrangement between the stem, leaves, and the upper bracts.

Flo'ret, Flo'rula—One of the little flowers in a head, as in Compositæ.

Flos—Flower. A complete flower is one in which the calyx, corolla, stamens, and pistils are all present; a perfect flower, one in which all these organs, or such of them as are present, are capable of performing their several functions. Therefore, properly speaking, an incomplete flower is one in which any one or more of these organs is wanting; and an imperfect flower, one in which any one or more of these organs is so altered as to be incapable of properly performing its functions. These imperfect organs are said to be abortive if much reduced in size or efficiency, rudimentary if so much so as to be scarcely perceptible. But in many works the term "incomplete" is specially applied to those flowers in which the perianth is simple or wanting, and "imperfect" to those in which the stamens or pistil are imperfect or wanting.

Flo'sculus (A little flower)—Floret. The tubular florets in a discoid head are termed "Flosculous."

Flu'itans—Floating. (See *Riccia fluitans.*)

Flumina'lis, Fluminens, Fluvia'lis—Applied to plants which grow in running streams.

Fœ'tidus—Having a disagreeable smell. (See *Passiflora fœtida*, the foliage of which, when rubbed, has an unpleasant odour.)

Folio'sus—When the leaves are particularly numerous upon a plant.

Fo'lium—A leaf. The ordinary leaf consists of the blade or lamina and the foot-stalk or petiole. When the form or dimensions of a leaf are spoken of, the blade is generally meant without the petiole.

Fol'licle, Folli'culus—A carpel opening at the inner suture only. The true follicle is described as one-celled, one or many seeded, one-valved, superior, dehiscent by a suture along its face, and bearing its seeds at the base, or on each margin of the suture. The fruit of the common Queensland tree, *Sterculia quadrifida*, or the Bottle tree or Flame tree, *S. rupestris* and *S. acerifolia*, are good examples.

Fora'men—A hole or minute aperture in the coats over the apex of the nucleus.

Formo'sus—Strikingly beautiful. (See *Adiantum formosum*).

Fornica'tus—Arched over. (See flowers of the Common terrestrial orchid, *Acianthus fornicatus.*)

Foveola'tus—Impressed with little holes or depressions.

FRAG'ILE.—Easily broken off.

FRONDO'SUS—Assuming a leaf-like condition.

FROND—A term given to the leaves of ferns; also frond, or thallus, is applied to the leafy expansions of Hepaticæ.

FRUC'TUS, FRUIT—The matured pericarp and its contents, together with any external appendages of the inflorescence which may accompany them, and seem to form an integral part with them, as the calyx in the Apple, the involucral bracts in the Oak, the receptacle in the Strawberry, &c. Botanists give the name to all seed-vessels. The peculiar fruits of the large orders have received special names, all of which will be found described in the proper place. The most common are *Siliqua* and *Silicule* of *Cruciferæ*, the *Legume* of *Leguminosæ*, the *Pome* of *Pyrus* and its allies, the *Pepo* of *Cucurbitaceæ*, the *Cone* of *Coniferæ*, the *Grain* or *Caryopsis* of *Gramineæ*.

FRUMENTA'CEOUS, FRUMENTACEUS—Producing farina or starch in sufficient abundance to be cultivated for economic purposes.

FRU'TEX—A shrub. **FRUTES'CENS**—Having the appearance of or becoming a shrub. **FRUTICULUS**—A little shrub.

FUGA'CIOUS—Soon falling off, as the calyx of the Poppy before the corolla is expanded, and the flowers of those pretty aquatic plants *Utricularia*.

FUL'GENS—Very brilliant and glittering.

FULIGINO'SUS—Sooty. Intense brown, passing to black. The deepest grey, with a little red.

FUL'VUS—Tawny, orange yellow with grey.

FU'MEUS, FUMO'SUS—Smoky, grey with a little red.

FUNA'LIS—Belonging to cords. **FUNILIFORMIS**—Formed of coarse fibres resembling cords, as the roots of *Pandanus*.

FUNGO'SUS—Spongy; of a thick, coriaceous, and elastic substance.

FUNIC'ULAR-CHORD, FUNIC'ULUS—A little rope, a chord-like appendage, by the intervention of which, in many cases, the seeds are attached instead of being seated immediately on the placenta. This is very prominent in *Acacia*.

FUNIC'ULUS—The thread which attaches the sporangia to the wall in the cup-like fungi of Nidulariaceæ.

FUNI'LIFORM—Rope-shaped. Tough, cylindrical, and flexible, like a chord.

FURCA'TUS, FURCELLA'TUS—Forked, and minutely forked.

FURFURA'CEUS—Covered with a meal-like powder.

FUS'CUS—Brown, with a grey tinge, deep grey and red.

FU'SIFORM, FUSIFOR'MIS, FU'SINUS—Spindle-shaped; a solid, whose transverse sections perpendicular to the axis are circular, and which tapers gradually at each end; as the stems of *Dendrobium speciosum*, var. *fusiforme*.

GABU'LUS—The fruit of the *Cyprus*, which is only a modification of the cone or strobilus; where the apex of each carpellary scale is much enlarged, as in *Cupressus* and *Thuja*, or even fleshy, as in *Juniperus*; so that collectively they form a rounded compact fruit.

GALACTOPOIET'IC—Plants which are supposed to have the power of increasing the flow of milk. This is attributed to the leaves of the Castor-oil plant. The seed of the Cotton plant are reported to be galac'togogue.

GA'LEA—A helmet. **GA'LEATUS**—Wearing a helmet. **GALEATE, GALEIFORMIS**—Resembling a helmet. Where a petal or other membranous organ is shaped in a hollow vaulted manner like a helmet. (See flowers of *Pterostylis.*)

GAM'ETE—Sexual protoplasmic body, naked or invested with a membrane, motile (zoogamete or planogamete) or non-motile, which, on conjugation with another gamete of like or unlike outward form, gives rise to a body termed "zygote."

GAMOPET'ALOUS, GAMOPET'ALUS — Synonym for "Monopetalous"; on the supposition that the corolla of such are formed by the union or grafting together of several petals. (See the corolla of *Gardenia.*)

GAMOSE'PALOUS, GAMOSEPALUS—Terms of similar construction, supposing such a calyx to be formed by the union of several sepals.

GELA'TINOUS, GELATINO'SUS—Having the consistence or general appearance of jelly.

GEM'INATE, GEM'INATUS—Growing in pairs, as the fruit of *Maba geminata*.

GEM'MA—A young bud. **GEMMATION, GEMINATIO**—Either the disposition of the buds on plants, or the period of their expansion.

GEMMIF'EROUS—Bearing buds.

GEM'MULE, GEM'MULA—Synonym for "Leaf-bud." The buds of mosses; the reproductive corpuscles of *Algæ*.

GENIC'ULATE, GENICULATUS—Where any part is bent abruptly, so as to form a decided angle. **GENIC'ULUM**—A little knee, a joint, a node.

GENUFLEX'UOUS—Bent angularly, like a knee-joint.

GE'NUS—The smallest natural group composed of distinct species. The known species of plants are now far too numerous for the human mind to study without classification, or even to give distinct single names to. To facilitate these objects, an admirable system, invented by that father of botany, Linnæus, has been universally adopted, viz.—One common substantive name is given to a number of species which resemble each other more than they do any other species; the species so collected under one name are collectively called a Genus, the common name being the Generic name.

GEOBLAS'TUS—An embryo whose cotyledons remain underground during the process of germination, as in the common Pea.

GER'MEN—Synonym for "Ovarium."

GIB'BOUS, GIBBO'SUS—Where a part is convex, as though it were swollen. (See *Lobelia gibbosa.*)

GIGAN'TEUS—Giant-like, when the dimensions of a particular species considerably exceeds those of any of its congeners.

GI'GAS—See large Nettle-tree, *Laportea gigas*; Black Bean, *Mucuna gigantea.*

GILL—Synonym for "Lamella."

GIL'VUS—A dirty yellow with a tinge of red, orange-yellow and grey.

GITHAGI'NEUS—Greenish-red.

GLA'BROUS, GLA'BRATUS—A surface wholly destitute of pubescence.

GLADIA'TUS, GLA'DIATE—Flat, straight, or slightly curved, with the edges parallel and the apex acute. Also synonym for "Ancipital."

GLAND, GLAN'DULA—Collections of cellular tissue, somewhat modified in its texture, and serving the purpose of a secreting organ. Some glands are sunk in the texture of the plants; others are elevated on pedicels, hairs, &c. (See "Stinking Rodger," *Tagetes glandulifera*; and glands on phyllodia of *Acacia.*)

GLANS—A one or few-seeded, dry, inferior, indehiscent pericarp, seated within a cupulary involucrum. The fruit of *Quercus* (Oak) is the best example.

GLAU'COUS, GLAUCES'CENS — Dull green, with a peculiar whitish-blue lustre. Also frosted with bloom of a bluish-green tinge. (See *Nicotiana glauca.*)

GLE'BA — Chambered sporogenous tissue within a sporophore.

GLE'BULÆ—Crumb-like masses.

GLOBO'SE, GLO'BULAR, GLOBULA'RIS — Nearly sphærical.

GLOCHI'DEUS, GLOCHIDIA'TUS—Where the pubescence is formed of barbed bristles. (See the stems of some Boragineæ.)

GLOMERA'TUS—Heaped up. Synonym for "Agglomeratus." (See the fruit of *Ficus glomerata*, the Cluster Fig.)

GLO'MUS—Synonym for "Capitulum."

GLUME, GLU'MA, CHAFF—The floral envelopes of Grasses and Sedges; but now more especially retained for the outermost husks only, which invest one or more flowers, composing the separate spikelets.

GLYPHO'LECINE—Impressed or canaliculate in an elongate wavy labyrinthine mode, like the genus *Glyphis.*

GONGYLO'DES—Knot-like.

GONID'IA—Propagative bodies of small size, not produced directly or indirectly by any act of fertilisation.

GON'OSPHERE—A ball-like agglomeration of spores.

GO'NUS or GO'NUM—In composition, means either kneed or angled.

GOSSYP'INUS—Cottony.

GRA'CILIS—Slender. (See Native Bluebell, *Wahlenbergia gracilis.*)

GRAFT'ING—In horticulture, the operation of affixing one portion of a plant to another in such a manner as that a vital union may take place between them. It may be performed both with herbaceous and ligneous plants. A grafted plant consists of two parts; the stock or stem, and the scion, which is a detached portion of another plant to be affixed to it. Success can only be looked for when the operation is performed upon allied plants. Grafting by approach, or inarching, is a mode of grafting in which, to make sure of success, the scion is not separated from the parent plant till it has become united with the stock.

GRAM'MICUS—Made by lines, lettered. (See the sori of *Grammitis.*)

GRAN'DIS—Great, as *Magnolia grandiflora.*

GRAN'ULAR, GRAN'ULATED, GRANO'SUS, GRANULA'TED, GRANULOSUS—When any organ is covered with or is composed of small tubercles resembling grains.

GRAPE VINES, TO STOP BLEEDING OF—When vines are pruned late in the season, or an old branch is broken or cut off during the growing season, the wound often bleeds copiously, and this flow of sap has been found a very difficult matter to stop. That great authority, T. A. Knight, however, says:—If to four parts of scraped cheese be added one part of calcined oyster shell or other pure calcareous earth, and this composition be pressed strongly into the pores of the wood, the sap will instantly cease to flow, so that the largest branch may of course be taken off at any season with safety.

GRAVEO'LENS—Possessing an intense odour, as *Ruta graveolens*, the common Rue.

GREGA'RIOUS—Clustered or crowded.

GRI'SEUS—Grey, the neutral tint, which may be formed by mixing blue, red, and yellow in equal proportions.

GRU'MOUS, GRUMO'SUS—In clustered grains. Applied to clustered, fleshy, tubercular roots. Synonym for "Granular." (See the grains of Sago.)

GUTTA'LUS—Spotted in drops.

GUM'MING OF FRUIT TREES—When a tree is found to exude a quantity of gum, the cause will be most frequently found in defective drainage and unfavourable subsoil.

GYM'NOS, in compounds, signifies naked, as GYMNOCAR'PUS, where the pericarp is either without any pubescence, or where it does not adhere to any of the outer floral whorls. In Coniferæ and a very few allied genera called Gymnosperms, or gymnospermous plants, the seed is naked, without any real pericarp. These truly gymnospermous plants must not be confounded with Labiatæ, Boragineæ, &c., which have also been falsely called gymnospermous, their small nuts having the appearance of seeds.

GYMNOS'TOMI — Naked-mouthed; mosses without a peristome.

GYMNOTREM'OID—A naked open spot or space.

GYNAN'DROUS — Where the stamens and styles are consolidated, as in Orchid flowers.

GYNAN'DROSPORUS — Bearing male and female spores.

GYNO'BASIS, GYNO'PHORE, GYNO'PHORUS—When the receptacle is distinctly elongated below the ovary it is often called by these terms. If the elongation takes place below the stamens or below the petals, these stamens or petals are then said to be inserted on the stalk of the ovary,and are occasionally, but falsely, described as epigynous. Really epigynous stamens (*i.e.*, when the filaments are combined with the ovary) are very rare, unless the rest of the flower is epigynous.

GYNOSTE'GIUM—Synonym for "Perianth."

GYNOSTE'MIUM—The columnar mass formed by the union of the style and filaments in Orchideæ.

GYP'SEUS (*Gypsum*, white lime)—Synonym for "Cretaceus."

GYRA'TUS—Turned about. Synonym for "Circinatus"; also, "Gyrans" is applied to a species of *Desmodium*, *D. gyrans*, because its lateral smal lleaflets keep turning round in a circle.

GYRO'MA (*Gyrus*, a circle)—Synonym for "Annulus."

GY'ROSE—Concentrically twisted or plaited.

HÆMATI'TIOUS—Red, with much grey.

HALONA'TUS—When a coloured circle surrounds a spot.

HALO'PHYTON—A plant which grows within the influence of sea-water.

HAMA'TUS, HAMO'SUS—Hooked.

HAM'ULUS, HA'MUS—A hook.

HAS'TATE, HASTI'LIS, HASTA'TUS—Shaped like the head of a halbert, the base diverging on each side into an acute lobe. (See leaves of *Chenopodium triangulare.*)

HAUSTO'RIUM—A term used to designate a special branch of a filamentous fungus mycelium serving as an organ of attachment and suction.

HEBECAR'PUS—Where a fruit is covered with a downy pubescence. HEBETA'TUS—Where the extremity is obtuse and more or less soft. (See fruit of one of North Queensland trees, *Diospyros hebecarpa.*)

HELVO'LUS—Pale red; yellow, red, and grey.

HEMICAR'PUS—One portion of a fruit which spontaneously divides into two separate parts, as that of *Umbelliferæ*. HEMICYLINDRICUS — Synonym for "Half-terete"; plane on the one side and convex on the other. HEMIGYRUS—A pericarp formed like a follicle, but more or less hard and woody; as in the *Banksia* and other proteaceous plants.

HEPA'TICUS — Liver-coloured; yellowish-red, with much grey.

HEP'TA—Seven in composition; HEPTAGY'NIA—Possessing seven styles; HEPTAN'DRIA—Possessing seven stamens.

HERBA'CEOUS, HERBA'CEUS—Used in contradistinction to "Woody." Also, applied to any portions of a plant which are more particularly green and succulent. The garden varieties of *Chrysanthemum indicum* are herbaceous plants.

HERBA'RIUM—A collection of plants, properly dried and prepared for botanical study. Synonym for "Hortus-siccus."

HERMAPH'RODITE, HERMAPHRODI'TUS — Where the stamens and pistils occur in the same flower, as in the Peach

HESPERI'DIUM (Said to be derived from the supposition that oranges grew in the garden of the Hesperides)—An indehiscent many-celled fruit, coated with a spongy rind (this rind is considered to be analogous to the epicarp and sarcocarp of the drupa); the cells containing a mass of pulp, in the midst of which a few seeds are embedded. The Orange, Lemon, &c., are examples.

HET'EROCYST—Intercalated cells of a special character differing from their neighbours.

HETEROG'AMOUS, HETEROGAMUS — Bearing flowers of different sexes. A head of flowers is heterogamous when male, female, hermaphrodite, and neuter flowers, or any two or three of them, are included in one head; homogamous, when all the flowers included in one head are alike in this respect. A spike or head of flowers is androgynous when male and female flowers are mixed in it.

HETER'OTROPAL, HETER'OTROPUS — Where the embryo lies oblique or transverse to the axis of the seed, the radicle not being directed to the hilum.

HEX'A—Six in composition, as HEXAG'YNIA, having six pistils; HEXAN'DRIA, having six stamens; HEXAHEDRICAL, having six sides.

HI'ANS—Gaping.

HILA'RIS—Belonging to the hilum.

HI'LUM—The scar left on the surface of a seed at the spot where it was attached by the funiculus or umbilical cord to the placenta. (See the scar upon the seed of the common Broad Beans.)

HIPPOCREP'SIS—Horseshoe-shaped, as the seeds of Menispermaceæ.

HIRCO'SUS—A goat-like odour.

HIRSU'TUS—Hairy, with dense but not stiff hairs. HIRTUS—Shaggy. (See *Indigofera hirsuta.*)

HIS'PID, HISPIDO'SUS, HISPID'ULUS—Where the pubescence is composed of long and rigid hairs, as in *Adiantum hispidulum.*

HISTO'LOGY (*Islos*, tissue, *logos*, a discourse)—That branch of botany which treats of the tissue of plants.

HOAR'Y—Greyish white. Synonym for "Canescent."

HOLO'—Whole; HOLOS', all, as *Panicum holosericeum.*

HOMO'GENUS—Of the same nature or kind.

HOMO'TROPAL, HOMOTRO'PUS—When the embryo is not straight, but still has the same general direction as the seed.

HO'RARY, HORA'RIUS — Lasting about an hour, as some flowers, those of the *Sida* weed, for instance.

HORMO'GONE—Special reproductive bodies, composed of a chain of cells.

HORTEN'SIS—Belonging to a garden.

HOR'TUS-SIC'CUS — Synonym for "Herbarium."

Humifu'sus — Procumbent; **Humilis** — Low, dwarf, used in comparison. (See *Crotalaria humifusa.*)

Hy'acinths in Glasses—Fill the glasses with pure water, so that the base of the bulb may just touch the water; then place them for about a week in a dark room; this will promote the formation of root. After this expose them to as much light as possible. The water should be changed as it becomes impure. In doing this draw carefully out of the glass all the roots, and well rinse them in clean water, taking care not to injure them; and at the same time well clean the inside of the glass.

Hya'linus—More or less transparent or translucent.

Hyberna'culum, Hyberna'cula — Winter quarters; any part which invests the nascent shoot, and protects it during the winter, as buds and bulbs; a form of the stock. In some perennials the stock consists merely of a branch, which proceeds in autumn from the base of the stem either above ground or underground, and produces one or more buds. This branch, or a portion of it, alone survives the winter. In the following year its buds produce the new stem and roots, whilst the rest of the plant, even the branch on which these buds were formed, has died away. These annual stocks, called sometimes hybernacula, offsets, or stolons, keep up the communication between the annual stem and root of one year, and those of the following year, thus forming altogether a perennial plant.

Hy'bridus, Hy'brida—A mongrel, the common offspring of two distinct species. Hybrids, or crosses between two distinct species, come under the same category of anomalous specimens from a known cause. Frequent as they are in gardens, where they are artificially produced, they are probably rare in nature, although on this subject there is much diversity of opinion, some believing them to be frequent, others almost denying their existence. Absolute proof of the origin of a plant found wild is of course impossible; but it is pretty generally agreed that the following particulars must always co-exist in the wild hybrid:—It partakes of the characters of its two parents; it is to be found isolated, or almost isolated, in places where the two parents are abundant; if there are two or three, they will generally be dissimilar from each other, one partaking more of one parent, another of the other; it will never be found where one of the parents grows alone.

Hy'drogogue — That which removes dropsy, as the Hogweed, *Boerhaavia diffusa.*

Hygrome'tric, Hygrome'tricus—Expressive of the state or degree of hygroscopicity of a plant.

Hyme'neum, Hyme'nium—So called from being membranous. Aggregation of spore-mother-cells, with or without sterile cells, in a continuous stratum or layer upon a sporophore. Same as sporagenous layer, hymeneal layer.

Hyperbore'an, Hyperbo'reus—Far north; signifying that the plant is indigenous in the northernmost countries, within the Arctic circle.

Hy'pha—A web. The filamentous, somewhat fleshy, debiquescent thallus of plants which form mouldiness.

Hypnosporan'gium—Sporangium enclosing hypnospores.

Hyp'nospore—Spores which repose (sleep) some time before germinating—"resting spores."

Hy'po—In compounds, signifies "under," as hypogynous stamens, below the pistil.

Hypoblas'tus—Synonym for the fleshy cotyledon of the grasses.

Hypochi'lus—The lower portion of the lip of Orchideæ.

Hypocrate'riformis (Salver-shaped)—Applied to a flower when the lower part is cylindric and the upper portion expanded horizontally. In this case the name of the tube is restricted to the cylindric part, and the horizontal portion is called the limb, whether it be divided to the base or not. The orifice of the tube is called the mouth or throat. (See flowers of the garden flower *Phlox.*)

Hypogæ'us—Plants which ripen their fruit under ground. Also, generally of any part that grows under ground. (See the pods of *Arachis hypogœa*, the Earth-nut.)

Hypo'gynous, Hypo'gynus, Hypogy'nicus (*i.e.*, under the ovary)—Seated below the base of the ovary, but not attached to the calyx. Flowers are hypogynous when the petals and stamens or the disc that bears them are entirely free both from the calyx and ovary. The ovary is then described as *free* or *superior*, the calyx as *free* or *inferior*, the petals as being *inserted on the receptacle.*

Hypophlæ'odal — Existing beneath the epidermis of bark.

Hypothal'lus—The mycelium of certain Fungi.

Hypothe'cium—The substance which immediately invests the perithecium of Lichens.

Hysteran'thous, Hysteranthe'us — Plants whose leaves expand after the flowers have opened.

Ian'thinus—Synonym for "Violaceus."

Icosan'drous, Icosan'der, Icosan'drus—Flowers having twenty or more stamens, which are partially attached to the calyx (perigynous), and consequently seem to originate from it.

Id'io-andro'sporous—Neuter individuals, producing androspores (in *Œdogonium*).

Ig'neus—Fiery. Synonym for "Flammeus." Bright scarlet. (See the flowers of *Cuphea ignea.*)

Ignia'rius—Having the puff-like consistency of German tinder, or from which this material can be produced, as *Fomes igniarius*, a large hard fungus found on forest trees.

Imber'bis—Beardless, without a beard.

Im'bricatus, Imbrica'ted—Laid one over another, like the tiles on a roof. Imbrications, where many parts are regularly arranged, and one part partially overlaps another. (See the petals of a flower of *Camellia imbricata.*)

Immar'ginate—Applied to the apothecia in which the proper margin is obliterated.

Immer'sed, Immer'sus—Growing entirely under water. Also when one part or organ is completely embedded in another.

Immo'bilis—Where no particular motion can take place about the point of attachment, as where anthers firmly adhere to the filament.

Im'pari-pinna'tus—Unequally pinnate.

Imperfec'tus, Imper'fect—Where certain parts usually present are not developed.

Imper'forate—Entire, without perforation.

Im'plex, Implica'tus — Wrapped. Synonym for "Plicatus."

Implex'us—Entangled. Implexo'-ra'mose—Branches interwoven.

Impregna'tion—Synonym for "Fertilization."

Impres'sus—Marked with slight depressions.

Inadhæ'rens—Free from all adhesion to contiguous parts.

Inæqua'lis—Unequal.

Ina'nis—Empty; when a stem has no pith, or only what is very soft and inconsiderable.

Inanthera'tus—When the filament produces no anther.

Inca'nus—Hoary.

Incarna'tus—Synonym for "Carneus," of a flesh colour.

Incep'tion—First beginning.

Inci'sus—Cut. When the indentations along the margin of a thin or foliaceous organs are deep. (See the foliage of the common Nettle, *Urtica incisa.*)

Incli'nans, Inclina'tus, Inclined, Inclining—Much bent out of the perpendicular, in a curved line, the convex side upwards.

Inclu'ded, Inclu'sus—Enclosed, when one part does not extend or protrude beyond another by which it is surrounded; as when the stamens or style do not extend beyond the mouth of a monopetalous corolla.

Incrassa'tus—Thickened.

In'cubous—The opposite of succubous. Incubous leaves are imbricated over each other from the base towards the apex, whereas in succubous leaves they are imbricated in the contrary direction.

Incum'bent, Incum'bens, Incubitus—Leaning or resting upon, where the radicle is bent and pressed against the back of one of the cotyledons. Applied to the anther, it implies the attachment to the filament to be at the back and not at the base.

Incrus'ted, Incrusta'ted — Where an outer envelope is firmly attached to the part it covers, as when a pericarp invests the seed so closely that it seems to form a portion of it.

Incurved', Incurva'tus, Incurvus — Gradually bending from without inwards, as when the stamens curve towards the pistil.

Indef'inite, Indefin'itus—Where the number of any particular description of organ is either uncertain, or forms no positive character. Thus: The number of stamens in a flower beyond twelve is not used in the artificial classification. Applied to the inflorescence, it is employed synonymously with "Centrifugal" or "Indeterminate."

Indehis'cent—Not opening.

In'dica—An Indian species, as *Dillenia indica*, the Chalta.

Indig'enous, Indigenus—The spontaneous production of a country.

Indivi'sus—Entire.

Indumen'tum or Clothing—This includes all those productions of the epidermis which have, by a more or less appropriate comparison, been termed bristles, hairs, down, cotton, or wool.

Induplic'ate, Induplica'tus—Where the edges of a valvate estivation are folded inwardly.

Indu'sium—Applied to the skin covering the sorus of some ferns. Also applied to the cup-shaped top of the style in Goodenovieæ.

Indu'viæ (Clothes)—Persistent portions of the perianth.

Infe'rior—When one organ is placed below another. More especially used to express the connection of the tube of a calyx with the ovarium; when connected to the ovarium, so that it forms an outer coat to it whilst the limb stands on the summit, the calyx is called superior and the ovarium inferior, as in the Rose. When perfectly free without contracting any adhesion to the ovarium, the calyx is said to be inferior, and the ovarium superior, as in the Poppy. This term is applied to the radicle when it is directed towards the hilum, at the base of seeds. The ovary of *Gardenia* and other Rubiaceous plants are inferior.

Inflat'ed—Swollen, bladdery. (See pods of *Swainsona*, the so-called Native Indigo.)

Inflex'ed, Inflex'us—Turned inwards. Synonym for "Incurved."

Inflores'cence, Inflorescen'tia — This term signifies the general arrangement of the flowering branches, and the flowers upon them. The forms of inflorescence are—The Spike, or spicate; the Raceme, or racemose; the Panicle, or paniculate; the Head, or capitate; the Umbel, or umbellate; the Corymb, or corymbose; the Cyme, or cymose; the Thyrsus, or thyrsoid. There are numerous cases where inflorescences are intermediate between some two of the above, and are called by different botanists by one or the other name, according as they are guided by apparent or by theoretical similarity. A spike-like panicle, where the axis is divided into very short branches forming a cylindrical compact inflorescence, is called sometimes a spike, sometimes a panicle. If the flowers are in distinct clusters along a simple axis, the inflorescence is described as an interrupted spike or raceme, according as the flowers are nearly sessile or distinctly pedicellate, although when closely examined the flowers will be found to be inserted not on the main axis, but on a very short branch, thus, strictly speaking, constituting a panicle. The Catkins (amenta), the spadices of several Monocotyledons, the ears and spikelets of Grasses, are forms of the spike.

IN'FRA-AXIL'LARY—Originating below the axil of the leaf.

INFRAC'TUS—Much broken. Synonym for "Inflexus."

INFUNDIBU'LIFORM, INFUNDIBU'LIFORMIS—Shaped like a funnel, like the flowers of Morning Glory.

INNA'TE, INNA'TUS—Where the point of attachment is at the apex, as in some cases of the anther to the filament.

INNOC'UOUS—Harmless.

INOPHYL'LUS—Veins of leaf thread-like. (See the lateral veins of the foliage of *Calophyllum inophyllum*, the Domba tree.)

I'NOPS—Poor, deficient, wanting.

IN'QUINANS—Stained. Example: *Pelargonium inquinans*, the parent of most of the so-called Scarlet Geraniums.

INSER'TION—The mode in which one body is connected to another, where it appears to have been attached to it, though in reality it has grown from it; as the leaf on the branch, the branch on the stem, &c.

ISIDUFEROUS—Bearing isidiose excrescences. **ISIDIOSE**—Having powdery coral-like excrescence.

INSIG'NIS—Notable; as that pretty annual, *Nemophila insignis*.

INSPIS'SATED—Thickened; spoken of sap or other liquor.

IN'TEGER—Entire. **INTEGER'RIMA**—Very entire. Besides being perfectly free from incision, this term implies a slight thickening of the margin, as though it were bordered. (See also *Asplenium attenuatum*, var. *integrum*.)

INTEG'UMENTUM, INTEGUMENT—A portion closely investing or merely surrounding another. Thus, the parts of the perianth are styled the "floral integuments" because they closely invest the stamens and pistils in the bud state. The seminal integuments are the coats which invest the kernel of the seed.

INTER'CALA'TED — Interspersed, placed between others.

INTER'CEL'LULAR—Between the cells.

INTERNODE'—A part of the stem between two nodes.

INTERRUP'TUS, INTERRUPTED—Where symmetry or regularity of outline of composition is partially destroyed.

INTRORSE'—Turned inwards, or towards the axis of the part to which it is attached. The dehiscence of an anther is introrse when the opening faces the pistil.

INTERSTI'TIAL—Placed between.

INVERSE'—Where the apex of one organ is placed in an opposite direction to that of another with which it is contrasted. The "embryo" is said to be inverse when the radicle is directed away from the hilum towards a point immediately opposite to it. (See also *Carex inversa*.)

INVOLU'CRE, INVOLU'CRUM—A cover. A whorl of bracts, free or united, seated on the peduncle, either near or at some distance below the flower or flowers. **INVOLUCEL'LUM**—A "partial" involucrum. **INVOLUCRATUS**—Furnished with an involucre. (See Hibiscus flowers.)

IN'VOLUTE, INVOLU'TIONS, INVOLU'TUS—Where the edges of a foliaceous organ are rolled inwards.

IRREG'ULAR, IRREGULA'RIS—Exhibiting a want of symmetry. Used also synonymously with "Unequal."

IRRITABIL'ITY, IRRITABIL'ITAS, IRRITA'BILIS—A vital property by which certain parts in some plants exhibit the phenomenon of spontaneous motion, when under the influence of particular stimuli. By some this is considered to be merely an extreme case of excitability. (See flowers of *Stylidium*, the Air-trigger plant.)

ISOCH'ROUS—Possessing a uniformity of colour throughout.

ISOLA'TED—Detached, placed by itself.

ISOME'ROUS—When each whorl of a flower contains the same number of parts.

I'SOSPORE—Applied to spores which are all of one size, or kind, in the same plant.

ISOSTE'MONOUS, ISOSTEMO'NUS—A flower which has stamens equal in number to the petals.

ITHYPHYL'LUS—Where a leaf is stiff and straight.

JAPON'ICUM — Belonging to Japan, as *Camellia japonica*.

JORULLE'NSIS—As *Cuphea jorullensis*, found upon Mount Jorullo, in Mexico.

JU'BA—A mane; the tops of trees. A loose panicle, as in the case of the male flowers of Maize. Also, a dense cluster of awns, as in the spikes of some grasses.

JU'GUM (*Juga*, pairs)—Applied to a pair of leaflets; thus a leaf may be unijugate, bijugate, or multijugate, according as there are 1, 2, or many pairs of leaflets.

JU'LIFORM—Formed like an amentum or catkin. (See the inflorescence of many *Acacias*—*A. Cunninghamii*, for instance.)

JUN'CEA—Rush-like, as the stems of *Russelia juncea*.

KEEL (Carina)—A projecting ridge, rising along the middle of a flat or curved surface. Also the two lowermost, and more or less combined, petals of a papilionaceous corolla.

KERMESI'NUS—Carmine, a pure red.

Label'lum—Lip; or rather the lower lip only. In orchids, one of the segments of the flower.

Labiate'—Lipped. Bilabiate or two-lipped; applied to the corolla. When in a four or five-lobed corolla, the two or three upper lobes stand obviously apart, like an upper lip, from the two or three lower ones or under lip. (See the flowers of *Salvia* or *Coleus*).

Labiose', **Labio'sus**—Where the petals of a polypetalous corolla are so arranged as to imitate the labiate form. (See flowers of *Aristolochia*.)

Lacera'tus, **La'cerus**—Torn.

La'chrymæfor'mis—Tear-shaped; in form somewhat resembling an apple-pip. (See also the seeds called "Job's tears," *Coix lachryma*.)

Lacin'iate, **Lacinia'tus**—Fringed; also "slashed."

Lacin'ula (Diminutive, from *Lacinia*, a fringe)—The small inflexed point of the petal in Umbelliferæ.

Lactes'cens—Producing milk. **Lacteus**—Like milk, milk-white.

Lacu'na—Small depressions on the upper surface of the thallus of Lichens. **Lacunose**, **Lacunosus**—Where the surface is covered with depressions (Lacunæ).

Lacus'trine, **Lacus'tris**—Living in or on the margins of lakes.

Læviga'tus—Polished. **Lævis**—Smooth. (See foliage of *Cassia lævigata*.)

Læ'tus, **Læ'tum**—Pleasing, bright. The "Ngaio" of New Zealand, *Myoporum lætum*.

Lamel'la—The gills of Agarics. Synonym for "Corona" in some silenaceous plants.

Lamel'lar, **Lamella'tus**, **Lamello'sus**—Tipped with two flat lobes, as are many styles. **Lamina**—The limb, as the flat expansion of petal or leaf.

Lam'inæ — The membranous strata in Lichens.

Lana'tus—Woolly, when the hairs are long and loosely intricate, like wool. (See *Stachys lanata*.)

Lan'ceolate, **Lanceola'ris**, **Lanceola'tus**—Shaped like the head of a spear, or lance; when about three or more times as long as broad, broadest below the middle, and tapering towards the summit. (See the leaves of the Red Bottle-brush, sometimes called Water Gum.)

Lanugino'sus—Downy, cottony. **Lanugo**—A fine soft pubescence. (See *Philydrum lanuginosum*, a common swamp plant.)

Lapi'deus, **Lapillo'sus**—Stony, of a hard texture, like the nuts of stone-fruits.

Lappa'ceus—Like a burr. Synonym for "Hamatus."

Lasian'thus—When the pubescence on the flower is velvety. (See one of the Queensland Capers, *Capparis lasiantha*. It may be frequently met with rambling over rocks).

Lat'eral, **Latera'tis**—Of the side. Fixed on or near the side of any organ. (See the spikes of *Lycopodium laterale*.)

Lateri'tius—Of a brick-red. Vermilion, with much grey.

La'tex—Juice. The proper-juice or returning sap of plants. Also applied to the moisture which exudes from the stigma.

Latisep'tus—Where the dissepiment in the fruit of Crucifera is broad in proportion to the thickness between the valves.

Lax'us—Loose. **Lax**—Loose, not compact. As *Eranthemum laxiflorum* and *Hydrocotyle laxiflora*.

Layering—This is a method of increasing plants without at once separating from the parent. Various methods are adopted to suit the requirements of different plants. A few notes may be given, such as—For all plants which are of a brittle character, it is well to give the branchlet of which it is intended to form the layer a twist between the thumb and finger to cause it to crack longitudinally before cutting the tongue; in forming this latter, always cut just below one of the upper buds of the shoot as it lies in the ground, as it will be less liable to break; a piece of brick, rock, or stone will be found preferable to the usual pegs, and save time. In multiplying plants of the superior varieties of Blackberry, the surest mode of obtaining good rooted young stock is to take a dibber-stick and go round the parent plant, dibble holes, and insert into each, point downwards, the end of all shoots available for the purpose. They are sure to make good bushy plants in a very short time, while the ordinary mode of layering is seldom satisfactory, and never pleasant to perform.

Leg'ume—The seed-vessel of Leguminosæ. One-celled and two-valved, with the seeds arranged along the inner angle; subject, however, to several modifications, which considerably mask the normal character.

Lenticel'la—Small lens-shaped spots on the bark of many of plants, from whence roots issue, under circumstances favourable to their development. **Lentiginosus**—Covered with freckles; dusty. (See the bark of plants allied to the Olive.)

Lenticularis, **Lentiformis**—A seed of *Amarantus*.

Le'pis — A scale. **Lepidote'** — Scaly. **Lepro'sus** — Covered with scales. Such scales are often from stillate hairs having their rays joined together at the base, thus forming circular disks attached by the centre. (See species of *Elæagnus*.)

Lep'tos—Slender, as *Leptospermum*, the Australian tea-tree, so-called from its very slender seeds.

Leucan'thus — Bearing white flowers. **Leucoceph'alus**—White-headed. (See *Xerotes leucocephala*, a common grass-like plant of sandy lands.)

Li'ber—The innermost and youngest circle of bark; that next the young wood, and formed of long, tough, woody tissue called bast-cells.

Li'ber, **Libera'tus**—Free, separate.

LIG'NEOUS, LIG'NEUS—LIG'NOSUS-Synonym for "Woody." LIGNIFEROUS—When branches form wood only, without flowers or fruit. LIGNINE, LIGNINA—A substance which fills the cellular tissue composing woody fibre.

LIG'ULA—A membranous appendage at the summit of the sheath of the petiole of grasses. LIG'ULA—A strap. LIG'ULATE, LIGULATUS — Synonym for "Strap-shaped." The absence of a ligule at the base of the leaf-blade of a Sedge is a mark between these plants and the grasses.

LILACI'NUS, LILAC—Blue and red, with a little grey.

LIMBA'TUS—Bordered.

LIMO'SUS—Muddy, growing in mud. (See those lovely little plants, *Utricularia.*)

LINE, LINEA—A line, the twelfth part of an inch.

LI'NEAR, LINEA'RIS—Where the side margins of a foliaceous expansion are parallel, and the length considerably longer than the breadth.

LINEA'TUS — Lined. Synonym for "Striated." LINEOLATUS—Marked with little lines. (See the pods of *Flemingia lineata*, a common small shrub of Tropical Queensland.)

LINGUIFOR'MIS, LINGULA'TUS — Tongue-shaped, as the leaves of *Dendrobium linguiforme.*

LIREL'LA—Applied to the linear apothecia of some Lichens.

LITHO'PHILUS—Applied to plants which grow on bare rocks and stones.

LITORA'LIS, LIT'ORAL—Applied to plants found on the sea-shores or banks of rivers, as *Psidium littorale.* A fine row of these trees may be seen in the Brisbane Botanic Garden.

LIV'IDUS, LIV'ID—Of a pale lead colour, grey and blue.

LOBA'TUS, LOBED'—Divided into lobes. LOBULÆ—Very minute lobes.

LO'CHIAL—Relating to the natural discharges consequent upon childbirth. *Aristolochia* is said to be useful in exciting the lochial discharge.

LOCU'LAMENT, LOCULAMEN'TUM—A cavity in the pericarp containing the seed. One of the cells of the anther. LOCULA'RIS, LOCULA'TUS—Containing more than one cell.

LOCULICI'DAL, LOCULICI'DUS—Applied to seed vessels which open for the escapement of their seeds between the placentas or dissepiment.

LOC'USTA—Synonym for "Specula," also for "Gluma." A spikelet or partial inflorescence of grasses.

LODI'CULA — Synonym for "Glumella." The palea or thin hyaline scales which represent the perianth of grasses.

LOMEN'TUM—A legume which is contracted in the spaces between the seeds. LOMENTA'CEOUS, LOMENTA'CEUS—When an expansion appears pinched at intervals, as though it were made up of several separate pieces applied end to end. Pods of this kind often separate into one-seeded parts, each of which in description is called an article.

LONGITU'DINAL, LONGITUDINA'LIS — With reference to the axis of any part. LONGUS, LONGISSIMUS — When some part is of greater length than some other part with which it is connected.

LORA'TUS, LORUM—A thong. Synonym for "Ligulatus." (See leaves of *Hakea lorea.*)

LO'RICA—Synonym for "Testa."

LU'BRICOUS—Slippery.

LU'CEUS, LU'CIDUS—Bright, shining.

LUNATE', LUNA'TUS—Like a half moon. Synonym for "Crescent-shaped." (See the leaflets of *Adiantum lunulatum.*)

LU'RID, LU'RIDUS—Of a dingy brown, grey with orange.

LUTE'US—Yellow. LUTE'OLUS, LUTES'CEUS—Yellowish. (See Yellow Lupine, *Lupinus luteus.*)

LY'RATE, LYRATIFI'DUS, LYRA'TUS—Where a leaf has several pairs of small lobes near the base, with deep sinuses between them.

MAC'ROS—In composition, signifies "long" or "large," as MACROCEPH'ALOUS, MACROCEPH'ALUS — Large - headed. Where the cotyledons of a dicotyledonous embyro are confluent, and form a large mass compared with the rest of the body. MACRO'PODOUS, MACROP'ODUS—Large-footed, where the radicle of a monocotyledonous embryo is large in proportion to the rest of the body. (See the long-stamened flowers of one of our swamp grass trees *Xanthorrhœa macronema.*)

MAC'RANDROUS—Having elongated male plants.

MAC'ROGONID'IA—Large gonidia.

MACULA'TUS, MACULO'SUS — Spotted, blotched. (See bark of the Spotted Gum, *Eucalyptus maculata.*)

MALLE'OLUS—The small shoots of a vine. The "layer" by which plants are propagated.

MALLOCOC'CUS—Where the fruit is downy.

MAMIL'LA—Little teat-like prominences on the surface of certain pollen. MAMILLA'RIS, MAMILLA'TUS—Where a wart-like projection surmounts a hemispherical body. (See those cacti called *Mamillaria*, or Nipple Cactus.)

MANICA'TUS, MANI'CATE—With sleeves or gloves; when pubescence is so much matted and interwoven that it may be easily removed from a surface in one mass. (See *Begonia manicata.*)

MANURES—*Inorganic*—The principal inorganic manures are ashes, lime, the marls, gypsum, bones, salt, charcoal, soot, and guano. *Organic*—The principal organic manures are the dung of animals, human excrements, urine, flesh, blood, fish, swamp muck, seaweed, and decayed leaves, hay, straw, and wood. Guano, though an animal product, contains so large a proportion of salt, and is so deficient in the characteristics of recent animal matter, that it is generally classed with inorganic manures.

MARCES'CENT, MARCES'CENS — Decaying, gradually withering without falling off.

MAR'GELLA—The elliptic ring surrounding certain stomatæ.

MARGINA'TUS—Edged, brimmed.

MARI'NUS, MARINE'—Inhabiting the sea. MARIT'IMUS, MAR'ITIME — Growing within the immediate influence of the sea. The former term is more frequently restricted to submerged plants, the latter to such as grow on the shore; but they are often used indiscriminately. (See *Malcolmia maritima*, the Virginian Stock.)

MAS — Male. MASCULINUS — Possessing male organs.

MAS'TOID—Teat-like.

MA'TRICAL—Belonging to the matrix.

MATULI'NUS—Taking place in the morning only, as the expansion of certain flowers.

MATURA'TION—The process of ripening; also the time when fruits are ripe.

MEDUL'LA—Pith. Also in the seed, employed as a synonym for "Perispermiam."

MEDUL'LARY, MEDULLO'SUS—Synonym for "Pithy." The medullary rays are vertical plates of cellular tissue, which proceed from the pith to the surface, and are characteristic of the stems of Exogens. The medullary sheath is a thin zone of vascular tissue immediately surrounding the pith. It abounds in spiral vessels, and is in direct connection, when young, with the leaf-buds and branches, with the petioles and veins of the leaves, and other ramifications of the system. Like the pith, it gradually disappears in old wood.

ME'GAS—In composition, "great," as MEGACE'PHALUS, great-headed, and MEGASPER'MA, as the large seeds of *Millettia megasperma*, called also Native Wistaria.

MEIOSTE'MONOUS, MEIOSTE'MONUS—Where the stamens are fewer in number than the petals.

MELANOPHYL'LUS—Having leaves of a dark colour. (See fruit of *Elæodendron melanocarpum*, or inflorescence of *Panicum melananthum;* also wood of *Acacia.*) MELANOXYLON—Blackwood, from producing wood of a very dark colour. Several trees have received this name.

MEL'INUS—Of a honey colour.

MEMBRANA'CEOUS, MEMBRANA'CEUS—Thin and more or less transparent. MEM'BRANE, MEMBRA'NA—A delicate pellicle of homogeneous tissue; also a very thin layer composed of cellular tissue. (See the fronds of *Trichomanes.*)

MENISCOID', MENISCOI'DRUS—Resembling a crescent.

MENSTRUA'LIS — Existing for about a month.

MEN'STRUUM—A liquor used as a dissolvent.

MERICAR'PIUM—One carpel, with part of the calyx investing it, in the fruit of Umbelliferæ.

ME'SOCARP—Synonym for "Sarcocarp."

MESOPHYL'LIC—In the middle of a leaf or frond.

MESOS—The middle; in composition, Meso.

MESOSPO'RIUM, MES'OSPORE—The middle membrane of the coat of a spore.

MESOPHYL'LUM—The whole inner portion or parenchyma of leaves, situate between the upper and under epidermis.

MET'AGENESIS — A kind of alternation of generation.

METEOR'IC — Applied to flowers whose expansion is influenced by the state of the weather.

MEX'ICANA—Of Mexico, as *Argemone mexicana*, or Devil's Fig.

MI'CROGONI'DIA—Small gonidia.

MI'CROS—Small; in composition, Micro.

MI'CROSOMA—Small granule.

μ=MI'CRO-MILLIMETRES.

MI'CROPYLE, MICROPYLA (Literally, "small gate")—The nearly closed foramen, as it exists in the ripened seed; or, in other words, a mark indicating the position of the foramen of the ovule.

MILDEW ON VINES, ROSES, TOMATOES, &c.—The following is recommended by a writer in *Gard. Chron.* for keeping in check this troublesome pest:—1½ lb. quicklime, 3 lb. sulphate of copper, 20 gallons of water. Dissolve the sulphate of copper in cold water for two hours in one vessel, in another pour a little water by degrees on the lime, mixing it well till it becomes a milky liquid, then pour the latter into the former, stir them well, and add to the 20 gallons of water already provided, and with this syringe the diseased plants.

MINIA'TUS—Of a vermilion colour. Pure red with a little yellow. (See flowers of *Tritonia miniata.*)

MIN'IMA—Least, as *Passiflora minima.*

MI'TRA—A bonnet. Used synonymously with "Galea," for "Helmet." MI'TRIFORM, MITRIFOR'MIS—Conical, and somewhat dilated at the base. (See *Mitrasacme* flowers.)

MM=MILLIMETRES.

MO'BILE—Capable of spontaneous movement.

MO'BILIS—Movable, variable. Synonym for "Versatilis." MOBILITY — The power of motion, as in Sensation plant.

MODI'OLUS—The nave of a wheel. MODIOLIFOR'MIS—Nave-shaped. (See fruit of the naturalized weed, *Modiola caroliniana.*)

MOLENDINA'CEUS—Mill-sail shaped; having many wings projecting from a convex surface, as the fruit of *Moringa.*

MOL'LIS—Soft. (See the leaves of *Dombeya mollis.*)

MONILIFOR'MIS—Necklace-like; where a cylindric body is contracted at regular intervals, as many legumes. (See *Sophora.*)

MO'NOS—Alone. "Mono," in compounds, signifies "one." As MONADEL'PHIA; the stamens having their filaments united together, so as to form a ring round the pistil; MONAN'DRIA, MONAN'DRUS, applied to flowers which have but a single stamen; MONOCAR'PEUS, when a plant bears fruit once only during its existence; MONOCEPH'ALUS, where flowers are disposed in single heads or umbels; MONOCHLAMY'DEUS, where a flower has one whorl only to the perianth; MONOCOTYLE'DONS, plants having only one cotyledon; MONŒ'CIOUS, when the male and female flowers are distinct, but on the same plant (see the Melon or Pumpkin, or the inflorescence of the Castor-oil plant); MONOG'YNUS, flowers having only one style or pistil; MONOLOCULAR'IS, one-celled; MONOPETA'LUS, synonymous with "Gamopetalus"; MONOPHYLLUS, applied to an involucrum when composed of a single piece; MONOSPERMUS, a fruit which contains only one seed.

MONOPETALÆ (2nd Sub-class of Dicotyledons)—Petals united into a single-lobed corolla.

MORPHOL'OGY, MORPHOLO'GIA—That department of botany which treats of the modification of certain fundamental organs, by which these are enabled to assume other functions than are performed by them under their normal condition.

MOS'CHATUS—Possessing the odour of Musk. (See the Musk plant, *Mimulus moschatus.*)

MO'TILE—Having powers of self-motion, though unconscious; as the motile spores of certain Algæ.

MUCO'SUS—Slimy. MUCUS — A definite peculiar matter, forming a covering of some Algæ.

MU'CRO—A sharp point, a straight stiff and sharp point. MUCRONA'TUS—Pointed; abruptly pointed by a sharp spinous process.

MUD'DING or PUD'DLING—Dipping the roots of young trees, shrubs, and other plants in a thin mud or puddle, previous to being packed for sending a distance. The following is considered to form a good puddle for the purpose—say, 3 lb. of garden soil, 1 oz. of salt, 8 oz. of coal soot, and 1 gallon of water.

MULCH'ING—Short moist stable litter makes the best mulching, and this, whenever possible, should be placed round all newly planted trees and shrubs, especially when such plants may require watering.

MUL'TI, in compounds, signifies "many," as MUL'TICEPS, many-headed; MULTIF'ERUS, often bearing; MULTIF'IDUS, many-cleft, where the subdivisions or laciniations are deep and numerous; MULTIJUGA'TUS, when a pinnate leaf bears many pairs of leaflets; MULTILOCULA'RIS, when a seed-vessel has many cells; MULTIPARTI'TUS, deeply divided into several strips or portions; MUL'TIPLEX, where many of the same parts or organs occur together; MULTIPLICA'TUS, where the petals of double flowers arise from supernumerary developments of the floral whorls.

MURAL'IS—Growing on walls, or belonging to a wall.

MURIFOR'MIS—Flattened cellular tissue in laminæ (as the medullary rays of exogens), and so arranged as to resemble the courses of bricks or stones in a wall.

MURICA'TUS—Rough, with short, hard tubercular excrescences.

MU'RINUS — Mouse-coloured; slightly reddish-grey; red with much grey.

MUTA'BILIS—Changeable. (See flowers of the Changeable Rose, *Hibiscus mutabilis*; or the Gold and Silver flower, *Lonicera confusa,* which from pure white changes to a golden yellow.)

MU'TICUS—Pointless.

MYCE'LIUM—The spawn, or root-like slender fibres that traverse the soil, in many kinds of Fungi.

MYCETOGEN'ETIC—Produced by Fungi.

MY'COSIS—A disease of animal tissue, due to the vegetative activity of a *Eurotium.*

MYRTOI'DEUS—Resembling the Myrtle.

MYU'RUS—Long and tapering, like a mouse's tail.

NAN'ANDROUS—Having short or dwarf male plants.

NA'NUS—Dwarf. Synonym for "Pumilus."

NAR'COTIC—A drug which produces sleep, as poppy-heads, and Thorn Apple, *Datura stramonium.*

NA'TANS—Swimming or floating. (See *Riccia natans,* a small plant common to still water about Brisbane.)

NATURAL ORDERS—Groups of genera collected together on account of their natural affinity under a common name generally derived from a supposed typical genus, as Geraniaceæ from *Geranium.*

NAU'CUM or NAU'CUS—The former has been applied to distinguish seeds whose hilum is very large. It is also used for the external fleshy covering of the stone of such fruits as the Peach. The latter has been applied to certain seed-vessels in Cruciferæ where the pericarp is valveless.

NAVICULA'RIS — Boat-shaped. Synonym for "Cymbiformis."

NEBULO'SUS—Misty, clouded.

NECROG'ENUS—A term applied to certain cryptogamic parasites, which hasten the death or destruction of the vegetables on which they live.

NEC'TAR—A sweetish exudation, secreted by glands in different parts of plants. NECTARIF'ERUS — Secreting nectar. NEC'TARIES—Are either the disc, or small deformed petals, or abortive stamens, or appendages at the base of the petals or stamens, or any small bodies within the flower which do not look like petals, stamens, or ovaries. They were formerly supposed to supply bees with their honey, and the term is frequently to be met with in the older Floras, but is now deservedly going out of use.

NEMOR'OSUS, NEM'ORUM—Found growing among trees, as *Acalypha nemorum.*

NEPHROI'DEUS—Synonym for "Reniformis," kidney form, as the indusium of many species of *Aspidium.*

Nerva'tion.—Leaves are more or less marked by veins, which, starting from the stalk, diverge or branch as the blade widens, and spread all over it, more or less visibly. The principal ones, when prominent, are often called ribs or nerves, the smaller branches only then retaining the name of veins, or the latter are termed veinlets. The smaller veins are often connected together, like the meshes of a net; they are then said to anastomose, and the leaf is said to be reticulate or net-veined. When one principal vein runs direct from the stalk towards the summit of the leaf it is called the midrib. When several start from the stalk, diverge slightly without branching, and converge again towards the summit, they are said to be parallel, although not mathematically so. When 3 or 5 or more ribs or nerves diverge from the base, the leaf is said to be 3-nerved, 5-nerved, &c.; but if the lateral ones diverge from the midrib a little above the base, the leaf is triplinerved, quintuplinerved, &c.

Nerva'tus, Nervo'sus—Having nerves; also when nerves are very prominently developed. **Nervulo'sus**—Diminutive of "Nervosus." (See inflorescence of *Dædalacanthus nervosus*, a shrub in most gardens.)

Neur'a—A nerve. **Neuro'sus**—Synonym for "Nervosus."

Neu'ter—When both stamens and pistil are imperfect or wanting.

Nidula'tus—Nestling. **Nid'ulans**—Imbedded in pulp, partially encased in some covering. (See species of *Cyathus*, Bird's-nest Fungus, which may often be met with on dungs.)

Ni'ger—Black; very dark grey, but not pure black. **Nig'ricans**—Blackish, as the Black Pepper, *Piper nigrum.*

Nit'idus—Bright. Synonym for "Lucens." (See the glossy leaves of *Gelsemium nitidum.*)

Niva'lis, Nivo'sus—Snowy; living amongst snow, or in snowy regions. Sometimes used as a synonym for "Niveus," snowy white.

Noctur'nal, Noctur'nus—Of the night, lasting through a night, as many flowers. Example: *Ipomœa bona-nox*, or common Moon flower.

Node—A point of the stem or its branches at which one or more leaves, branches, or leaf-buds are given off. An **Internode** is the portion of the stem comprised between two nodes.

Nodo'sus—Knotty. Also synonymous with "Moniliform." **Nodulose', Nodulo'sus**—Furnished with little knots. (See one of the tea-trees about Brisbane, *Melaleuca nodosa*, which bears its flowers and fruits in knot-like masses.)

Nosol'ogy or **Pathol'ogy**—That part of botany which treats of the diseases of plants.

Nota'tus—Marked by spots or lines.

Notorhi'za—Synonym for "Incumbens," when applied to the embryo of Cruciferæ.

Novæ-Hollandiæ—Belonging to New Holland (Australia), as the Climbing Nettle, *Tragia Novæ-Hollandiæ.*

Nucamenta'ceous, Nucamenta'ceus—Resembling a small nut. Synonym for "Indehiscent," when applied to certain seed-vessels, as the siliquæ of some Cruciferæ. **Nucamentum**—A catkin; synonym for "Amentum." **Nucella**—Diminutive, from "Nux," a nut; synonym for "Nucleus." **Nucifor'mis**—Nearly spheroidal, but tapering at one end—*i.e.*, shaped like a filbert. **Nucule, Nucula**—A small nut; synonym for "Glans." Also one or two forms of apothecia peculiar to Characeæ.

Nuclea'rius—The part of a seed developed within the nucleus—viz., the embryo and albumen together. **Nucleous, Nu'cleus** (a kernel)—The inner, pulpy, and closed sack of the ovule, within which the embryo and its immediate covering are developed.

Nucula'nium (From *nucula*, a small nut, because it contains hard seeds)—A two or more celled indehiscent fruit, formed from a superior ovule filled with fleshy pulp, containing few or several seeds. The grape (*Vitis*) and our Scrub Crab (*Sideroxylon*) fruit are examples.

Nu'dus—Naked, as **Nudicaulis.** When a stem has no leaves, the word is used to imply that a plant or organ is free from hairs, down, &c. (See *Jasminum nudiflorum.*)

Nulliner'vis—Synonym for "Enervis," nerveless.

Numbers—The number of leaves or their parts is expressed adjectively by the following numerals derived from the Latin:—Uni, 1; bi, 2; tri, 3; quadri, 4; quinque, 5; sex, 6; septem, 7; octo, 8; novem, 9; decem, 10; multi, many; prefixed to a termination, indicating the particular kind of part referred to. Thus—Multidentate means many-toothed, &c.

Nummula'ria—Round, like a piece of coin. (See the leaves of the pretty North Queensland epiphyte, *Dischidia nummularia.*)

Nu'tans—Nodding. (See the inflorescence of Shell-flower, *Alpinia nutans.*)

Ob—A prefix denoting inversion. Thus "obclavate" is the inverse of "clavate," the attachment being at the thicker end.

Obcompres'sed—Where the compression or flattening is contrary to the more usual condition. **Obcor'date**—(See leaflets of the Sour-grass, *Oxalis corniculata.*)

Obcur'rens—Where the partial dissepiments in an ovarium extend to the axis, so that the capsules become multilocular.

Obimbrica'tus—Where the imbrication is from above downwards. Also used where rows of scales are so arranged that those on one row overtop those of the row immediately above or within them.

Ob'ligate—Necessary, essential.

Ob'ligate Parasite—An organism to which a parasitic life is indispensable for the attainment of its full development.

Oblig'ulate, Obligula'tus—When the corolla of a ligulate floret (in Compositæ) is extended on the inner instead of the outer side of a capitulum.

Oblique', Obli'quus—When the midrib of a plane leaf being nearly horizontal, but pointing somewhat towards the ground, the limb itself is more or less inclined to the horizon, owing to a twist in the petiole or in the base of the limb. Also, when a plane leaf is so divided by the midrib that the divisions on each side are slightly unequal, as the base of many Eucalypt leaves.

Ob'long, Oblong'us—Of an elliptical shape, where the major and minor axis bear a proportion to each other of about four to one.

Obova'lis—Used as a synonym for "Obovate."

Obo'vate, Obova'tus—When the point of attachment is at the narrow end of the ovate form.

Obrin'gens—When the ringent corolla of a floret (in Compositæ) has the interior lip composed of one-fifth, and the posterior of four-fifths, of the whole.

Ob'scurus—Of a dark or dingy colour.

Obstruc'tus—Where hairs, ciliæ, or other appendages partially close the throat of a tubular corolla.

Obsub'ulate, Obsubula'tus—Very narrow pointed at the base, but gradually widening a little towards the apex.

Obsutura'lis (*Ob*, over against, *sutura*, a suture.)—Applied to the suture of a pericarp.

Obtura'tor—A small body which accompanies the pollenic masses of Orchideæ and Asclepiadeæ, closing the opening of the anther.

Obtu'sus — Blunt. **Obtusius'culus** — Somewhat blunt.

Obvalla'tus—When consecutive pairs of opposite leaves are arranged at small angles of divergence from each other, and not in a brachiate manner, where the angle is a right angle.

Obver'sus—When the point of the radicle, in the seed, approaches the hilum.

Obvoluti'ous—When the margins of leaves or petals, in the bud state, are mutually enrolled one within the other. More especially applied to two plicate leaves, which, in vernation, have each one margin embraced by the folding of the other leaf.

Ocean'idus—Belonging to the Ocean. Synonym for "Hydrophyton.'

Occulta'tus--Hidden.

Ocella'tus, Ocellate—Spotted in a manner somewhat resembling the pupil and iris of an eye. One spot of colour within another spot, as the pink-eyed variety of *Vinca rosea*, var. *ocellata*, an abundant weed in Queensland.

Ochra'ceus—The colour of yellow-ochre; yellow, with a little grey.

Och'rea—See "Ocrea."

Ochroleu'cus—Of a pale yellow, with a faint tinge of dingy yellow.

Ochrophlo'ia—Yellow bark, as *Eucalyptus ochrophloia*, the Paroo Yellow jacket.

O'crea—A membranous sheath at the base of some leaves, which clasps the stem. (See *Polygonum orientale*, a tall showy weed of swampy land.)

Oct or **Octo**—Eight in composition. Thus: **Octagy'nia**, flowers with eight pistils or eight free styles; **Octan'dria**, flowers with eight stamens; **Octogynia**, synonym for "Octagynia;" **Octo'nus**, eight together; **Octoste'monus**, with eight free stamens.

Oc'ulus—The first appearance of a bud, especially the bud on a tuber. Also a small depression on the summit of fruits, as the Apple and Pear.

Odes, Oides—A termination denoting similarity, resemblance.

Odora'tus—Possessing any decided odour though more generally restricted to such as are sweet, as the *Reseda odorata*, Mignonette.

Officina'lis—Applied to those plants which are or may have been considered useful in medicine or the arts, as *Verbena officinalis*, the Holy Herb.

Olea'ginous, Oleaginus—Succulent and oily; also like oil.

O'lens—Strong-scented, whether agreeable or nauseous.

Olera'ceous (From *olus*, a pot herb)—Esculent, eatable, as the Pig-weed, *Portulaca oleracea.*

Ol'igos—Few, or in small number; in composition, "Oligo" and "Olig.'

Oli'gos (In Greek compounds, a small number)—It is generally used in contrast with many (poly), when no specific number is employed, as in the definition of things the number of which is small, but variable; thus *oligocarpous* is applied to sori, in which the spore-cases are few in number; *oligorrhiza* where the roots are few in number, as in the little Duck-weed, *Lemna oligorrhiza.*

Oliva'ceus—Of an olive-green colour; orange and grey. (See *Sarcochilus olivaceus.*) **Olivæ formis, Olivifor'mis**—Shaped like an olive, ellipsoidal. (See fruit of *Chrysophyllum olivæforme.*)

Omople'phytum—Synonym for a plant with a monadelphous flower, because the stamens are blended together into one bundle.

Omphalo'dium (From *omphalos*, the navel, and *eidos*, a resemblance.)—The mark left in the hilum by the passage of the vessels of the raphe.

Ontog'eny—Development of an individual.

Oögamy—Conjugation of two gametes of dissimilar form.

Oögonium—A kind of ovarian sack containing spores which, when liberated, are called oospores.

Oöspore—Spores produced in an ovarian sac.

O'paque, Opacus—When the surface is dull or not at all shining.

Oper'culate, Operculatus—Covered by a lid; closed by an "oper'culum," as the Eucalypt flowers before expansion.

Op'posite—When similar parts or organs are so arranged in pairs that one of them is immediately on the opposite side of some interposed body, or of the axis about which they are disposed. **Oppositiflo'rus**—Where the peduncles are opposite. **Oppositifol'eus**—Where the leaves are opposite.

Orange—Yellow and red in about equal proportions.

Orbic'ular, Orbicula'ris—Perfectly or very nearly circular. **Orbiculus**—A description of fleshy "corona" surrounding the organs of fructification in the genus *Stapelia.*

Organ—A general name for any defined subordinate part of the vegetable structure, external or internal; as cell, fibre, leaf, root. Every portion of a plant which has a distinct part or function to perform in the operations or phenomena of vegetable life is called an organ. The root, stem, and leaves, whose function is to assist in the growth of the plant, are Organs of Vegetation. The flower and fruit, whose office is the formation of the seed, are Organs of Reproduction.

Organog'raphy—That part of botany which treats on the organs of plants.

Orgy'a—From 5 to 6 feet. A toise. **Orgya'lis**—The length of a toise.

Or'ifice—An opening, as the top of a corolla-tube.

Ortho'tropal, Ortho'tropous, Ortho'tropus—Where the embryo is straight, but so lies in the seed that the radicle is towards the hilum, owing to the inversion of the nucleus. This term is also applied to the entire ovule or seed, without reference to the position of the embryo; when the nucleus is straight, and the chalaze and hilum correspond or are close together, and consequently where the direction of the embryo is "antitropal," or the very reverse of that here described.

Oscilla'nus, Oscillato'rius—Synonym for "Versatilis."

Os'mose, Os'mosis—See "Endosmosis."

Ostio'lum—The orifice of the perithecium and apothecium.

Os'seous—Synonym for "Bony." **Ossiculus**—A "stone" in fruit; synonym for "Pyrena." **Ostariphylum**—A plant which bears a drupe.

Ova'lis, O'val—Elliptical. Where the major and minor axes bear the ratio of about two to one to each other. **Ovate, Ovatus**—Shaped like an egg. Of the form of an egg, when applied to a solid body; but when applied to a superficial area it means the figure presented by a longitudinal section of an egg, broader at the base than at the apex; sometimes used synonymously with "Oval." **Ovoid', Ovoi'dal, Ovoi'deus, Ovula'ris**, are synonymous with "Ovate," when applied to a solid form. The leaves of the common Lantana bush are mostly ovate.

O'vary—The enlarged base of the pistil, which includes one or more cavities or cells, containing one or more small bodies called ovules. These are the earliest conditions of the future seeds. Each ovule, when fully formed, usually consists of a central mass or nucleus enclosed in two bag-like *coats*, the outer one called *primine*, the inner one *secundine*. The *chalaza* is the point of the ovule at which the base of the nucleus is confluent with the coats. The foramen is a minute aperture in the coats over *apex* of the nucleus.

O'vules are *orthotropous* or *straight*, when the chalaza coincides with the base of the ovule, and the foramen is at the opposite extremity, the axis of the ovule being straight; *campylotropous* or *incurved*, when the chalaza still coinciding with the base of the ovule, the axis of the ovule is curved, bringing the foramen down more or less towards that base; *anatropous* or *inverted*, when the chalaza is at the apex of the ovule, and the foramen next to its base, the axis remaining straight. In this, one of the most frequent forms of the ovule, the chalaza is connected with the base by a cord, called the *raphe*, adhering to one side of the ovule, and becoming more or less incorporated with its coats, as the ovule enlarges into a seed; *amphitropous* or *half-inverted*, when the ovule being, as it were, attached laterally, the chalaza and foramen at opposite ends of its straight or curved axis, or about equally distant from the base or point of attachment.

Oxyacan'thus—Furnished with many sharp thorns or prickles.

Oxycar'pus—Where the fruit is sharp-pointed.

Pach'ys—Thick, as **Pachiden'dron**, thick tree; **Pachycar'pus**, where the pericarp is very thick; **Pachyne'ma**, referring to the filaments of certain flowers being thick.

Pagi'na—The upper or under surface of flat-leaves.

Pala'ceous, Pala'ceus—When the edges of any organ, but more especially the margins of a leaf, adhere to the support.

Pal'ate, Pala'tum—The inferior surface of the throat in ringent and personate corollas, where it is elevated into two longitudinal ridges, with a depression between them.

Pa'leæ, Pales, or **Chaff** are the inner bracts or scales in Compositæ, Gramineæ, and some other plants, when of a thin yet stiff consistence, usually narrow and of a pale colour. **Palea'ceous**—Of a chaffy consistence.

Pal'lidus—Pale; with very slight tinge of colour.

Palm, Palma'ris—The breadth of four fingers. **Palmus**—From thumb to little finger; about three inches in length. **Pal'mate, Palma'tus**—When the arrangement of subordinate parts of any organ is such as to imitate the form of an open hand. **Palmat'ifid, Palmatif'idus**—When the subdivisions of a simple leaf, having a palmate arrangement, extend about half-way towards the base. **Palma'tilobatus**—Where the lobes of a simple leaf have a palmate arrangement. **Palmatipar'titus**—When the subdivisions of a simple leaf, having a palmate arrangement, extend considerably more than half-way to the base. If more deeply cut, the term **Palmatisec'tus** is used. The leaves of the Castor-oil plant are usually palmately seven-lobed.

Paludo'sus, Palus'tris — Growing in marshy places.

Pandu'riform, Pandu'ræformis, Pandu'riformis — Where an oblong or obovate leaf is indented in the lower half by a deep sinus; fiddle-shaped, as the leaves of one of the Docks, *Rumex*; also *Hibiscus panduriformis.*

Pan'icle, or Panic'ulate—An inflorescence where the axis is divided into branches bearing two or more flowers. (See the inflorescence of the common Oat.)

Pannifor'mis, Panno'sus—Looking like a piece of cloth; somewhat thick and spongy.

Papaw Juice—There is said to be a growing demand for this in a concrete state. The method of preparation, as given in the Pharm. Journ., Dec., 1892, is to cut lines across the fruit, and allow the juice to drop upon sheets of glass, where it is allowed to dry; this is all the preparation required.

Papiliona'ceous, Papiliona'ceus—Butterfly-flowered. These flowers have an irregular corolla composed of five petals, the upper one of which is called the standard or *vexillum*, and is outside in the bud; the two lateral ones, called wings or alæ, are intermediate; and the two lowest ones, which are more or less united along the lower edge or approximate, face to face, form the shape of a boat, and are called the keel or *carina*, and more or less enclose the stamens and style.

Papil'la—The nipple; a small elongated protuberance, formed of a distended cell of the cellular tissue, upon various surfaces. **Papilla'ris**—Resembling a papilla, but of larger dimensions, and composed of several cells. **Papilla'tus, Papillife'rus, Papillo'sus**—Covered with papillæ.

Pap'pus — Thistle-down. The peculiar limb of the calyx of the florets of Compositæ. **Pappi'ferus, Pappo'ferus, Pappo'sus**—Furnished with pappus.

Papyra'ceus, Papyrif'erus — Papery. Thus *Fatsia papyrifera* is so named as from its pith rice-paper is made.

Parabol'ic, Parabol'ical, Parabol'icus—From the mathematical figure termed a parabola. A synonym for "Ovato-oblong."

Paracar'pium—An abortive ovary; also a persistent portion of some style or stigma. **Paracorol'la**—Any appendage to the corolla that is usually classed amongst nectaries. **Paraphyl'lum**—Certain foliaceous expansions on some calyces.

Paral'lel, Paralleli'cus, Parallel'us—Where the axes of two parts lie parallel to each other.

Paraph'yses—Filaments sometimes articulated, occurring in the fructification of Ferns, Mosses, Lichens, &c.

Par'asite, Parasi'ta—A plant which obtains its nourishment directly from the juices of some other plant to which it is attached. (See the *Loranthus*, Mistletoe.) The Dodder, *Cuscuta*, is a parasitic plant differing from Mistletoe in that it germinates in the soil, and after a few days, if it fails to find a plant to attach itself to, it will wither away.

Paren'chyma or Cel'lular Tis'sue consists usually of thin-walled cells, more or less round in form, or with their length not much exceeding their breadth, and not tapering at the ends. All the soft parts of the leaves, the pith of stems, the pulp of fruits, and all young growing parts, are formed of it. It is the first tissue produced, and continues to be formed while growth continues, and when it ceases to be active the plant dies.

Pa'ries—The inner surface of the pericarp or of a tubular calyx. **Pari'etal, Parieta'lis**—Attached to the *paries* or wall. (See "Placenta.")

Pari-pinnate'—Synonym for "Abruptly pinnate."

Parthenogen'esis—Production of fertile seeds without sexual impregnation. Proved to be impossible, although believed in for some time; and our Queensland shrub, *Alcornea ilicifolia*, quoted as an instance, and given the name of *Cœlebogyne* on that account.

Parthenogon'idia — Gonidia produced without fecundation.

Par'vus—Small. Applied relatively, where some object is small by comparison with similar objects. Thus, **Parviflorus, Parvifolius**, &c., are terms given to plants whose flowers or leaves are smaller than those of other allied species. (See *Panicum parviflorum*, a very common grass near Brisbane.)

Parterre'—A French term, used by the English gardener to denote a small enclosure or flower garden, laid out in beds of different sizes and shapes. This kind of planting produces a pleasant effect only when the colour of the flowers are well considered; therefore, as all persons have not that nice perception of the fitness of things which is required, an extract is given for their guidance out of a European publication. 1st. The three simple colours, blue, red, and yellow, when pure, or nearly pure, contrast agreeably together; but in close contiguity each of them absorbs, as it were, something of the shade which would result from a proper combination with the complementary colours of its neighbours. For instance, red by the side of yellow assumes a slight tinge of violet, which is the complementary of yellow; and the yellow a shade of green, which is the complementary of red. 2nd. The colours complementary to one another contrast advantageously. This is sufficiently evident by the approximation of yellow and violet—composed of red and blue; red and green—composed of yellow and blue; or blue and orange—composed of red and yellow. 3rd. The binary associations of composite colours will also produce pleasing results, because in each group all three of the elementary colours will be found reunited. That the contrasts will be strong and effective may be judged by bringing together violet (red and blue), and orange (red and yellow), or the former with green (yellow and blue). 4th. But the results are poor or bad when simple colours are associated with mixed colours into whose composition they enter, as in this case only two of the primary colours are represented. Hence red contrasts badly with orange (yellow and red), and with violet (red and blue); blue with violet (red and blue), or with green (blue and yellow). Yet if the simple colour form but a small proportion of the mixed colour with which it is associated, the contrast will be sufficiently strong to please the eye. Thus a lively blue produces a good effect by the side of a bright or yellowish green, and bright yellow by the side of a deep green in which the blue element predominates. But these two cases, as will be seen, come within the preceding rules, which show that, in a general sense, contrasts are agreeable in the same proportion as they are decided. 5th. All colours, simple or compound, are brightened by the vicinity of white, and, moreover, contrast with it in a most agreeable manner. White has the additional advantage of improving bad combinations, by being placed between the colours that do not look well together, as, for instance, between red and orange, red and violet, or violet and blue, &c. Hence, this colour, so freely lavished in nature, plays an important rôle in decorative culture. 6th. With the exception of white, all colours are weakened by the neighbourhood of black, which deprives them of a certain extent of their brilliancy. Dull or deep tints suffer especially when associated with black—resulting, of course, from the feebleness of the contrasts. But as black in but few instances occurs in the Vegetable Kingdom, such contrasts could not be effected, except between plants and the soil, when this latter is very dark, and the dull purple foliage of some plants, or the deep purple-violet flowers of others. The combinations of colours in the flower-garden are commonly binary or ternary, rarely quarternary, unless the green of the foliage be considered as taking rank in these combinations. The most commendable binary combinations are as follows, which we arrange in the order of their respective merits:—(*a*) All colours, simple and compound, with white, though the brighter and purer the colours the more pleasing the contrasts; for example, bright or deep blue with white, rose or red with white, bright yellow with white, orange with white, green with white, and violet with white. (*b*) The simple colours together, or with their complementaries, such as red and yellow, red and blue, yellow and blue, yellow and violet, orange and blue, and green and red. Ternary combinations are far less numerous, and in most cases white is an element; often, indeed, it is repeated. The following examples will enable one to judge:—White, red, and green; or white, red, white and green; blue, orange, blue and white; or white, orange, white and blue; white, yellow, violet and white; or white, yellow, white and violet; yellow, red, white and yellow; white, red, blue and white; or, better, white, red, white and blue; white, orange, green and white; or, better still, by interposing white between the orange and green; white, orange, white and violet; or, still more effective, white, orange, white and violet; white, yellow, blue and white; or the same combinations with the yellow and blue separated by white.

PATELLIFOR'MIS—Dish-shaped; knee-pan-shaped.

PA'TENT, PA'TENS—Spreading. PA'TULUS—Slightly spreading. (See *Salvia patens.*)

PATHOGEN'OUS—Producing disease.

PATHOL'OGY or NOSOLOGY—That part of botany treating upon plant diseases.

PAU'CUS—Few. Applied relatively, when certain portions are few in one species compared with similar portions in an allied species. Thus PAUCI-FLORUS, PAUCI-FOLIUS, and PAUCI-JUGATUS, &c.

PIO'TA—Painted. (See flowers of *Bignonia picta.*)

PECTINATE', PECTINA'TUS—Where a "pinnatifid" incision has the segments parallel, narrow, and close, like the teeth of a comb. (See fronds of *Gleichenia.*)

PEC'TORAL—Relating to the breast.

PEDA'LIS—About a foot in length.

PE'DATE, PEDA'TUS—Where the subordinate parts have a palmate arrangement, with the addition of further subdivision in the lateral portions. PEDAT'IFID, PEDATI'FIDUS—Where the subdivisions of a simple leaf, arranged pedately, extend about half-way towards the base.

PED'ICEL—This is the last branch of an inflorescence, supporting a single flower. PEDICEL'LATE, PEDICELLA'TUS—Furnished with a pedicel.

PE'DUNCLE-This is the stalk of a solitary flower, or of an inflorescence; that is to say, the portion of the flowering branch from the last stem-leaf to the flower, or to the first ramification of the inflorescence, or even up to its last ramification; but this portion extending from the first to the last ramification or axes of inflorescence is often distinguished under the name of *rhachis*. **PEDUNCULATE', PEDUNCULA'RIS, PEDUNCULA'TUS, PEDUNCULO'SUS**—Furnished with a peduncle.

PEL'LICLE, PELLI'CULA — An extremely delicate superficial membrane; a synonym for "Epidermis." **PELLICULA'RIS**—With the character of a pellicle.

PELLU'CID, PELLU'CIDUS—Perfectly or only partially transparent.

PELO'RIA—A form assumed by certain flowers, which, being unsymmetrical in their usual state, become symmetrical in what may be considered as a return to their normal type.

PELTATE', PELTA'TUS—Where a support is inserted at some distance within the margin, and is not in the same plane as the flat surface, which rests upon it. (See the leaf of the garden *Tropeolum majus*, or Indian Cress.)

PELTI'DEUS, PELTIFOR'MIS—Target or buckler-shaped.

PELTINER'VIS—Where the nerves diverge from the summit of a petiole, and spread on all sides in a plane that is much inclined to it.

PELTOI'DEUS—Shaped like a shield; somewhat orbicular, and convex on the upper side.

PEND'ENT—So much inclined that the apex is pointed vertically downwards. **PENDULOUS, PEN'DULUS, PENDULIN'US**—Synonym for "Pendent"; more especially where the flexure arises from weakness of the support.

PENICILLA'TUS—Bordered or tipped with fine hairs resembling those of a hair pencil. **PENICILLIFOR'MIS**—When in the form of a hair pencil.

PEN'NATE, PENNAT'US, PENNAT'IFID—Synonyms for "Pinnate," &c.

PENNINER'VED, PENNINER'VIS—Where the primary nerves of a leaf are straight and diverge from the midrib in a pinnate manner; feather-nerved.

PEN'TA—In compounds, signifies five. Thus **PENTACHAI'NIUM**, a five-celled fruit; **PENTAGY'NUS**, flowers with five pistils, or five distinct styles; **PENTAN'DRUS**, flowers with five stamens.

PE'PO—Fruits so termed are one-celled, many-seeded, inferior, indehiscent, fleshy; the seeds attached to parietal pulpy placent. At maturity its cavity is frequently filled with pulp, embedding the seeds; their point of attachment is, however, never lost. For examples, see Cucumber, Melon, Gourd, Papaw.

PEREM'BRYUM—The portion of monocotyledonous embryos investing the plumule and radicles not externally distinguishable.

PEREN'NIAL, PEREN'NIS—Of three or more years' duration, and polycarpic.

PERFOL'IATE, PERFOLIA'TUS—When leaves oppositely arranged unite at their bases; or when the basal lobes of clasping leaves become united, so that the axis about which they are placed appears to pass through them.

PERFORA'TED, PERFORA'TUS—Pierced with one or more holes.

PERGAMENTA'CEUS—Having the consistency of parchment.

PER'I—Around; in Latin, Circa.

PERIANTH', PERIAN'THIUM—The name given to the floral envelope which usually encloses the stamens and pistil when young, and expands and exposes them to view when fully formed. This complete perianth is double; the outer one, called the calyx, is usually more green and leaf-like; the inner one, called the corolla, more conspicuous, and variously coloured. It is the perianth, and especially the corolla, as the most showy part, that is generally called the flower in popular language. In very many cases, a so-called *simple* perianth (of which the parts are usually called *leaves* or *segments*) is one in which the sepals and petals are similar in form and texture, and present apparently a single whorl. But if examined in the bud, one-half of the parts will generally be found to be placed outside the other half, and there will frequently be some slight difference in texture, size, and colour, indicating to the close observer the presence of both calyx and corolla. Hence much discrepancy in descriptive works. Where one botanist describes a simple perianth of six segments, another will speak of a double perianth of three sepals and three petals. The term "perianth" should only be employed to designate a calyx and corolla the limits of which are undefined, so that they cannot be satisfactorily distinguished from each other, as in the case of Tulips, Lilies, Crinums, and Orchids. But even in these examples the limit between calyx and corolla not only exists, but is often plainly evident.

PER'ICARP, PERICAR'PIUM—The portion of the fruit formed of the ovary, and whatever adheres to it, exclusive of and outside of the seed or seeds, exclusive also of the persistent receptacle, or of whatever portion of the calyx persists round the ovary without adhering to it. **PERICLI'NIUM**—The involucrum of Compositæ.

PERICHÆ'TIAL LEAVES—Those at the base of the fruit-stalk of a moss.

PER'IDERM, PERIDERMIC—The enclosing membrane.

PERID'IUM—General term for the outer enveloping coat of a sporophore upon which the spores develop in a closed cavity. In Uredineæ it envelopes the æcidium, and is also termed *pseudo-peridium, paraphyses envelope*. In Gastromycetes, termed also *uterus*, and may be differentiated into *peridium* *externum* (outer peridium), the outermost layer which opens in various ways and separates from the *peridium internum* (inner peridium), a layer directly enclosing the gleba.

Perien'chyma—Irregular cellular tissue, chiefly in glands and spheroidal masses.

Perigy'nous (*i.e.*, round the ovary)—The term is applied to petals, &c., when the disk bearing them is quite free from the ovary; but is more or less combined with the base of the calyx-tube. The ovary is then still described as *free* or *superior*, even though the combined disk and calyx-tube may form a deep cup with the ovary lying at the bottom; the calyx is said to be *free* or *inferior*, and the petals are described as *inserted on the* calyx.

Peripher'al — The outer portion of a circle.

Per'isperm, Perisper'mium, Perisper'mum—Synonym for "Albumen."

Per'istome—The opening of the sporangium of mosses after the removal of the calyptra and operculum.

Perithe'cia—The cysts or capsules containing the asci.

Perithe'cium—The envelope surrounding the masses of fructification in Fungi and Lichens.

Per'itropal, Per'itropus—Where the axis of a seed is perpendicular to the axis of the pericarp, to which it is attached.

Perla'rius, Perla'tus—Shining with a pearly lustre; furnished with rounded tubercular appendages.

Perpusil'lus—Synonym for "Pusillus."

Persist'ent—When any part or organ, in particular plants, remains beyond the period of maturity and fall, appointed for similar parts in other plants; or to the period of full maturity attained by neighbouring parts.

Per'sonate, Persona'tus—A form of monopetalous bilabiate corolla, where the orifice of the tube is closed by an inflated projection of the throat.

Pertu'sus — Synonym for "Perforatus." (See the outer glume of *Andropogon pertusus.*)

Per'vious, Pervius—Admitting the passage of some portion without interruption; as where the pith is continued through a node in the stem.

Per'ula—Little pouch. A sac formed in some orchids by the prolonged and united bases of two of the segments of their perianth. The cup-like covering of buds, formed by the abortion of their outer leaves.

Pes—A foot, or, as in Ipomœa Pes-capræ, from the supposed resemblance of the leaves to the foot of a goat.

Pet'al, Pe'talum—One of the foliaceous expansions constituting the subordinate parts of the floral whorl, termed the corolla. They are usually *alternate* with the sepals; that is to say, the centre of each petal is immediately over or within the interval between the sepals. **Petalodeus**—Where a double flower is formed by the transformation of any of the parts about the corolla into petal-like expansions. **Petaloid**—Resembling petals.

Pet'iole, Peti'olus—The stalk or support by which the blade or limb of a leaf is attached to the stem. **Petiola'ted**—Furnished with a petiole or leafstalk. The separate stalk of each leaflet in a compound leaf is termed a petiolule.

Phænog'amous, Phanerogamous, Phænog'amus, Phanerogamus—Plants of the two classes, Dicotyledons and Monocotyledons, in which the male and female organs are apparent, in one shape or another, at some period of their life.

Phal'lus—A name given to a genus of fungi from a supposed resemblance; the species are not without beauty, but are nearly all fœtid.

Phæni'ceous, Phæni'ceus—Purple; red, very slightly tinged with grey.

Phi'los—Fond, as in *Nemophila.*

Phleps—A vein.

Phlo'ia—A termination used in many of the specific names derived from the Greek, and signifies bark. (See *Eucalyptus hemiphloia,* "half barked"; *E. melanophloia,* "black barked"; *E. ochrophloia,* "yellow barked"; *E. siderophloia* "iron barked."

Phragmi'gerus—Where an otherwise continuous cavity is separated into subordinate parts by transverse partitions of a membranous or cellular character.

Phyl'laries—A useless term, which has been introduced for the bracts or scales of the involucre of Compositæ.

Phyllo'dium—When the limb of a leaf is abortive, and the petiole becomes developed into a flattened expansion, like most of Australian Acacias, wattles, brigalow, myall, &c. **Phyllodi'neus**—Bearing phyllodia.

Phyl'loma—The aggregate mass of germs contained in a leaf-bud.

Phylloma'nia—Leaf-madness; where a superabundance of leaf-buds is formed in comparison with flower-buds.

Phyllotax'is—The manner in which leaves are arranged upon the stem.

Phyl'lula—The scar left on the branch by the fall of a leaf.

Phymato'deus — Synonym for "Verrucosus."

Phy'sa—A bladder.

Physe'ma, Physeu'ma — A swelling. Synonym for "Frond" in the aquatic Algæ; also a branch of a Chara.

Physiol'ogy—That part of Botany which treats of the functions of plants.

Phytog'raphy, Phytogra'phia—That department of Botany which includes the description of plants.

Phy'toliths—Fossil plants.

Phytol'ogy, Phytol'ogia (*Phyton,* a plant; and *logos,* a discourse)—Synonym for "Botany."

Phytono'mia—Synonym for "Botanical Physiology."

Phytony'mia — Synonym for "Organographia."

Pi'ceus—Black, with a brownish tinge; red, almost concealed by admixture with intensely deep grey.

Pic'tus—Painted. Example, *Bignonia picta*.

Pi'leus—A cap. Pile'olum—A little cap. Pilidium—Like a cap. (See cap of Mushroom.)

Pilif'erus — Bearing hair. Pilose', Pilo'sus — Hairy. Pilosius'culus—Somewhat hairy. Pilus—Hair. (See the common Carrot plant.)

Pin'na—A leaflet. Pinnate, Pinna'ted, Pinna'tus—A compound leaf, with leaflets arranged along each side of the rhachis. When the arrangement is confined to pairs, it constitutes the "equally or pari-pinnate"; when terminated by an odd leaflet, the "unequally or impari-pinnate." Pinnat'ifid, Pinnati'fidus—When the lateral incisions of a simple leaf extend towards the axis, and approach the form termed Pinnatisec'tus, a form of pinnatifid, where the incisions are deep. Pinnate—Extending to the axis.

Pin'nule—A leaflet of a pinna or secondary leaflet.

Pip—In floriculture, is a single bloom, where several grow upon a common stalk, as in the *Agapanthus*, *Polyanthus*, *Auricula*, &c. The pips thus growing together are described as a truss. (See "Truss.")

Pi'siform, Pisifor'mis—About the size and shape of a garden Pea.

Pis'til, Pistil'lum—Either synonymous with "Carpel," when each portion of the innermost floral organ is free; or it is composed of the aggregation of the carpels, when these unite and thus form a compound organ. It is essentially composed of the ovary, with its ovules; and the stigma or stigmata, with sometimes an intervening style. Flowers are termed pistillate when they bear a pistil, but either no stamens at all or only imperfect ones.

Pith, Medul'la—A cylinder of cellular tissue, occupying the centre or longitudinal axis of the stem. It is active only in young stems or branches, becomes dried up and compressed as the wood hardens, and often finally disappears, or is scarcely distinguishable in old trees.

Placen'ta, Placenta'rium—The part of the inside of the ovary to which the ovules are attached; sometimes a mere point or line on the inner surface, often more or less thickened or raised. Placentation is therefore the indication of the part of the ovary to which the ovules are attached. Placentas are *axile* (see fruit of *Hypericum*), when the ovules are attached to the axis or centre—that is, in plurilocular ovaries, when they are attached to the inner angle of each cell; in unilocular simple ovaries, which have almost always an excentrical style or stigma, when the ovules are attached to the side of the ovary nearest to the style; in unilocular compound ovaries, when the ovules are attached to a central protuberance, column, or axis rising up from the base of the cavity. If this column does not reach the top of the cavity, the placenta is said to be *free* and *central*. (See fruit of *Dianthus*, &c.) *Parietal* (See fruit of Violet.) When the ovules are attached to the inner surface of the cavity of a one-celled compound ovary. *Parietal* placentas are usually slightly thickened or raised lines, sometimes broad surfaces nearly covering the inner surface of the cavity, sometimes projecting far into the cavity, and constituting partial dissepiments, or even meeting in the centre, but without cohering there. In the latter case the distinction between the one-celled and the several-celled ovary sometimes almost disappears.

Pla'gios—Oblique, as in *Plagianthus*.

Plane, Pla'nus—Flat; where a surface is perfectly level.

Planius'culus—Where a surface is nearly but not quite level.

Plant—In a botanical sense, includes every being which has *vegetable* life, from the largest trees to the minute Algæ of the ponds.

Planting—Do not plant trees or shrubs deep. This is the cause very often of stunted growth, early decay, and even death itself. Deep planting is often done with the idea that the tree will stand more firmly. When removing, never allow the roots to be exposed longer than necessary, and see that as little injury as possible is done to them in the operation of removal.

Plat'ys, in compounds, signifies "broad." Platycar'pus—Broad fruit. Platyphyl'lus—Broad leaf. Platystigma—Broad stigma. Plat'ys — Large or broad; in composition, Platy; in Latin, Latus and Late, as the Stag's-horn fern, *Platycerium*.

Ple'ion—Several; in composition, Ple'io; in Latin, Plu'ri.

Ple'iophyllus—Where no buds, and consequently no branches are developed in the axils of leaves, and the stem supports these only.

Ple'nus—Full. Synonym for "Double," where the stamens and pistils become petaloid. Also where a stem is solid, in contradistinction to "hollow" or "fistular."

Pleurocar'pi—Mosses with the fructification proceeding laterally from the axils of the leaves.

Pleuren'chyma—Woody tissue.

Pleurosper'mus—Ribbed seed. Pleurocar'pus—Ribbed fruit, as the fruit of *Ficus pleurocarpa*, a Fig of Northern Queensland.

Plexe-oblas'tus—When cotyledons rise above ground in germination, but do not assume the appearance of leaves.

Plicate', Plica'tus—Folded together in longitudinal plaits, regularly disposed. Plica'tulate—Minutely plaited. (See *Aloe plicatilis*.)

Plopocar'pium—A fruit composed of follicles ranged round an axis. Synonym for "Folliculus." For example see the Larkspur.

Plum'beus—Lead-coloured; dull grey, with metallic lustre.

Pluma'tus—Synonym for "Pinnatus."

Plumose', Plumo'sus—When hair is invested with branches, arranged like the beard on a feather.

Plu'mule, Plu'mula—The portion of the embryo which develops in a contrary direction to the radicle. It is the first bud, or germinate, of the young plant.

Plu'ri signifies "several" in compounds. Thus: **Plurilo'cular**—Several celled. **Pluriparti'tus**—Where an organ is deeply divided into several nearly distinct portions.

Pneu'mato-chymi'ferus—A term applied to spiral vessels; and **Pneurato'ferus** has been restricted to the external membranous tube of such vessels.

Poculifor'mus—Cup-shaped.

Pod—Synonym for "Legume."

Pode'tia—The stalk; like elongations of the thallus of some lichens.

Podocar'pus, Pod'ocarp—Where the ovary is seated on a gynobasis, gynophore. **Podogy'nium**—Synonym for "Gynophorus."

Podoce'phalus—Where a head of flowers is elevated on a long peduncle.

Po'gon—Beard; in Latin *Barba*. (See the heath-like small shrub *Leucopogon juniperinus*, so common on forest land, the flowers of which are bearded inside.)

Poli'tus—Perfectly smooth and glossy or polished, as the testa of many seeds.

Pol'len—Utricular grains, formed within the anther, either free and resembling dust, or variously agglutinated into waxy masses. The "granules" are very minute particles within the pollen grains; and the "pollentube" is a membranous extension of a coat of the grain, developed when this is subjected to the influence of the stigma. **Pollen-mass**—An agglutinated mass of pollen, peculiar to the state in which it occurs in some orders; as in Orchideæ and Asclepiadeæ. **Pollina'ris, Pollino'sus**—As if dusted with pollen. **Polli'nicus**—Composed of or bearing some relation to pollen.

Pol'lex, Pollica'ris—A thumb's breadth, about an inch long.

Polli'nia—Term used to designate the pollen-masses in Orchideæ. (See the genus *Dendrobium*, which has 4, or *Eria*, which has 8 of these masses in each flower.)

Pol'y—Many, or an indefinite number, in composition. Thus: **Polyadel'phia**—Plants whose stamens cohere into more than two distinct groups or bundles. **Polyan'dra**—Flowers with more than twelve stamens; or flowers are called Polyan'drous when the stamens are free and numerous. **Polyan'thus**—Bearing many flowers. **Polycar'picus, Polycar'pus**—Where the carpels, being distinct and numerous, each flower bears several fruits. Used synonymously with either perennial or arborescent plants, which, lasting many years, reproduce their fruits many times, in contradistinction to "Monocarpous." **Polyce'phalus**—Having many heads. **Polycla'dia**—Many branches. **Polycoc'cus**—A fruit composed of many cocca. **Polygy'nous**—Having many distinct pistils, or an avary with many distinct styles.

Polyg'amous—When there are male, female, and hermaphrodite flowers on the same or on distinct plants.

Polypet'alæ—(1st sub-class of Dicotyledons. Petals distinct, wanting in a few genera, very rarely united).

Pome, Po'mum—A fleshy multilocular fruit, matured from an inferior ovary; the seeds enclosed in dry cells, with a bony or cartilaginous lining. The Apple is an example.

Pomeridia'nus—Applied to flowers which expand after noon.

Pomif'erus—Bearing fruit or excrescences, shaped like an apple. **Pomifor'mis**—Approaching the shape of an apple. **Pomol'ogy, Pomolo'gia**—A treatise on fruits.

Poren'chyma—Cellular tissue, elongated and apparently perforated by pores.

Poro'sus—Where the tissue is, or appears to be, full of small holes. **Por'ulus**—The diminutive from "Porus." **Porus**, and pl. **Pori**—Aminate superficial hole. Synonym for "Stoma," and for "Ascus" of some Fungi.

Porphy'reus—Synonym for "Purpureus." (See the bracts of *Porphyrocoma*, a plant not uncommon in bush-houses).

Posti'cus—Behind. Synonym for "Extrorsus." The words *posterior*, back, and *anterior*, front, are often used for upper and lower respectively, but their meaning is sometimes reversed if the writer supposes himself in the centre of the flower instead of outside it.

Pota'meæ—Synonym for "Fluviales."

Pous or **Pus, Podos**—A foot. As in *Podocarpus* and *Lycopodium*.

Præ'cox—Appearing or flowering earlier than other allied species. **Precius**—Ripening before others; synonym for "Præcox."

Præflora'tion and **Præfoliation**—Terms used synonymously for "Æstivation" and "Vernation," but are seldom used in descriptive botany.

Præmorse', Præmor'sus—Bitten off, ending abruptly; as where roots, or more frequently rhizomata (called roots), have decayed at the end. Also where the truncate termination of any foliaceous lamina appears jagged. (See pinnæ of *Caryota urens*.)

Præno'men—The first name; synonym for "Generic."

Præus'tus—Burnt at the point, of a brown tint, as though it had been produced by burning.

Pra'sinus—Leek-green. Pure green, with a slight admixture of grey.

Praten'sis — Belonging to a meadow. Species usually met with in meadows, as the common Red Clover—*Trifolium pratense.*

Prick'les and **Spines**—In ordinary language these terms are often confounded. A prickle (aculeus), however, is a mere outgrowth from the bark, while the spine (spina) is an abortive sharp-pointed branchlet. A slight pressure at the base will suffice to detach a prickle, as its attachment is but superficial, but to remove a spine the woody cylinder of the branch with which it is continuous has to be broken or cut.

Pri'mary, Prima'rius—The part which is first developed. The principal parts in the subdivisions of a compound arrangement, as the main petioles of a compound leaf; the pedicels of a compound umbel which support the partial umbel.

Prim'ative, Primiti'vus—The first or earliest. The first part developed. Applied to specific types; in opposition to forms resulting from hybridisation.

Pri'mine, Pri'mina—The outermost and last developed integument to the nucleus of the ovule.

Primor'dial, Primordia'lis—The earliest formed of any set of organs, or the principal parts of some of them. **Primordial-Utricle**—The layer or internal coating first formed in and co-extensive with the cell, during the perfecting of the cellular tissue.

Prismat'ical — Prism-shaped. **Prismat'icus**—Approaching the form of a prism; where the surface of either solids or tubes presents angles, disposed longitudinally. **Prismen'chyma** — Where the vesicles of the cellular tissue are prismatic. (See *Juncus prismatocarpus.*)

Probocid'eus—Beaked. (See fruit of *Martynia.*)

Proce'rus—Lofty. Synonym for "Elatus."

Procum'bent, Procum'bens—Lying upon or trailing along the ground. (See *Justicia procumbens.*)

Produc'tum, Produc'tus — Prolonged. Synonym for "Calcar."

Proem'bryo—The portion of the spore in some Acotyledons which assumes a foliaceous character in developing.

Proem'inens—When a part is unusually extended or stretches beyond another, which more frequently surpasses it.

Project'ura—A small longitudinal projection on some stems where the leaf originates.

Prolif'erous, Pro'lifer, Proli'ferus—An unusual development of supernumerary parts, of the same or of a different description from those on which they are developed, as where the flower-buds become viviparous; where the leaf produces germs, &c.

Proli'gerus—Applied to a portion of the apothecio of Lichens, in which the sporules are generated.

Prom'inens — Projecting beyond some neighbouring part.

Pro'nus—Face downwards. Lying flat upon the ground, or other support. Applied also to the under surface of a horizontal leaf.

Propac'ulum—An offset. **Propago**—A shoot, a layer, an axillary bud. **Propag'ulum**—Synonym for "Propaculum," a granular reproductive body, many of which, collected together, form the soredia of Lichens.

Propaga'tion — This term, applied to plants, means any method by which they can be increased in number. To deal with this subject would necessitate the use of illustrations, so little more than the enumeration of the names of the various modes employed for this object will be given. By seed may be termed the most natural, but a very large number of plants in cultivation are created by the art and ingenuity of man, and such cannot with safety be reproduced by seed; therefore, recourse is made to what is termed budding, cuttings, grafting, layering, and leaf-propagation offset, tubers, bulbs, corns, &c.

Pro'physis, Pros'physis—Synonym for "Adductor."

Pro'prius (Peculiar)—Partial.

Proscol'la—A viscid gland on the rostellum of an Orchid.

Prosem'bryum—Synonym for "Perispermium."

Prosen'chyma, or woody tissue, differs in having its cells considerably longer than broad, usually tapering at each end into points and overlapping each other. The cells are commonly thick-walled; the tissue is firm, tenacious, and elastic, and constitutes the principal part of wood, of the inner bark, and of the nerves and veins of leaves—forming, in short, the framework of the plant.

Prostra'tus—See "Procumbent."

Proteran'thous, Proteranthus—Where the flower-buds expand before the leaf-buds.

Protophyto'logy—Fossil botany.

Protoplas'ma—A coating deposited on the inside of the cells of the cellular tissue, of quaternary chemical composition (carbon, hydrogen, oxygen, and nitrogen), which fills an important part in cell-division and growth.

Protos'trophis—A spiral vessel, separating from the main bundle that enters the leaf, and forming part of the primary veins.

Protothal'lus—The first part formed, or substratum to the thallus of Lichens.

Prui'na—Powdery secretions on the surface of some plants; also on certain fruits. **Pruina'tus, Pruino'sus** — Frosted, powdery, as the "bloom" upon Plums or Grapes. This term is scarcely distinct from "Roridus."

Pru'ning—Shrubs should always be done with a knife, and in such a manner as to leave them with a natural appearance. Clean cutting is more agreeable to the eye, and less hurtful to the plant, as the wound readily heals over. Dead branches should be cut off as close as possible to the stem or parent branch, that the wound may soon be grown over. In shortening branches cut close to a bud, which should be on the outside of the branch of the tree or shrub, where such are alternately placed, as in the Peach. *Roses*—It has been found best to sparingly prune vigorous-growing kinds, whilst the weaker-growing sorts should be cut back pretty close.

PRU'NUM—A plum; synonym for "Drupa." PRUNIFOR'MIS—Approaching the form of a Plum.

PRU'RIENS—Itching; producing an itching sensation. See the pods of the Cowhage (*Mucuna pruriens*).

PSEU'DES—False. Thus:—PSEU'DO-BULB—Swollen internodes as seen in the stems of some Orchideæ. PSEU'DO-CAR'PUS—Synonym for "Galbulus." PSEUDO-COSTA'TUS—Where the outer veins of a leaf combine, and form a line parallel to the margin. PSEUDO-GYRA'TUS—Where the annulus of a fern is seated on the summit of the theca. PSEUDO-HYME'NIUM—A covering of the spores of Algæ, resembling the hymenium of Fungi. PSEUDO-PERID'IUM—Resembling a peridium. PSEUDO-PERISTO'MIUM—The external peristome, where it is early obliterated. PSEUDO-PO'DIUM—A leafless dilated branch, on which the sessile theca of some Mosses is developed.

PSI'LOS—Bare.

PSILOSPER'MUM—Bare seed, as in *Strychnos psilosperma*, of which the seeds are wanting the usual hairs of the genus.

PSILOSTA'CHYUS — A thin spike; where the inflorescence is in very slender spikes.

PTERI'DIES, PTERID'IUM—Synonym for "Samara."

PTERIDO'GRAPHIA, PTERIGRAPH'IA — A treatise on ferns.

PTEROCAR'PUS—When a fruit is winged. PTEROCAU'LIS — Where a stem is winged. PTEROG'ONUS — Where an angle is winged. PTEROI'DEUS—An elevated extension of the surface, assuming a wing-like appearance. PTERO'PODUS—Where the petiole is winged. PTEROSPER'MUS—Where a seed is winged. PTERYG'OPUS—Where the peduncle is winged.

PTY'CHODES — Synonym for "Protoplasma."

PU'BERTY, PUBER'TAS—The period when a plant first begins to produce flowers. PUBER—The period of maturation in fruit.

PU'BESCENCE—Elevated extension of the cellular tissue of the epidermis, assuming the character of hair, scale, or gland. PUBESCENT—Furnished with pubescence. PUBIG'ERUS — Bearing pubescence.

PUGION'IFORMIS—Shaped like a dagger. (See leaves of *Dendrobium pugioniforme*, a rather common epiphyte in the mountainous parts of Southern Queensland.)

PULCHEL'LUS, PULCHER, PULCHRA, PULCHRUM—Fair or beautiful, as *Cæsalpinia pulcherrima*, the Barbadoes flower fence.

PUL'LUS—Black. Synonym for "Coracinus."

PULPO'SUS—Pulpy; of the consistence of pulp. PULPA—Pulp.

PULVERA'CEUS, PULVE'RIUS—Powdery or dusty. PULVERULEN'TUS — Dusted, coated with powdery grains. PUL'VIS—Dust; any light powder excreted on the surface. PULVIS'CULUS—The powder contained in the spore-cases of some Fungi.

PULVI'NUS—A cushion. An enlargement, like a swelling, on the stem immediately below the leaf. PULVINA'TUS, PULVINIFOR'MIS—Assuming the appearance of a cushion or pillow. PULVIN'ULA, PULVIN'ULUS—Diminutive of "Pulvinus," often applied to the branched or simple excrescences originating on the upper surface of the thallus of some Lichens.

PU'MILUS — Dwarfish, in comparison with allied species.

PUNC'TATE, PUNCTA'TUS, PUNCTICULA'TUS, PUNCTICULO'SUS—Synonym for "Dotted." PUNCTIFOR'MIS—In the form of a small pointed projection, or nearly reduced to a mere point.

PUN'GENT, PUN'GENS—Very hard and sharp-pointed (pricking).

PUNI'CEUS (Scarlet)—Pure red.

PUR'PLE, PURPURA'RIUS, PURPURA'TUS, PURPU'REUS—Of a purple colour; blue and red. PURPURAS'CEUS, inclining to a purple colour.

PUSIL'LUS (Weak and small)—Diminutive, with respect to allied species.

PUSTULA'TUS, PUSTULO'SUS—Having convex elevations like blisters.

PUTA'MEN (Shell or nut)—The endocarp, when it becomes hard and bone-like, as in stone fruits. PUTAMINA'CEUS—Bony.

PYC'NOS—Dense, as in PYCNOCEPH'ALUS, where the flowers are densely crowded in the inflorescence; PYCNOSTACHYS, a dense-flowered spike.

PYGMÆ'US (Dwarfish)—Synonym for "Pumilus." (See the common Coast Grass, *Panicum pygmæum*.)

PYRACAN'THUS—With yellow spines. (Fire spine.)

PYRAM'IDAL, PYRAMID'ALIS—Either angular and tapering upwards, as a pyramid, or used synonymously with "Conical."

PYRE'NE, PYRE'NA — Synonym for "Putamen," and particularly when the putamen consists of several distinct stones or nuts, each enclosing a seed.

PYRENA'RIUM, PYRID'IUM — Synonym for "Pomum," more especially when the endocarp is bony.

PYRE'NOCARP—Cup-shaped ascocarp, with the margin incurved so as to form a narrow-mouthed cavity. The same as perithecium.

PYC'NIDES are large thick-walled spermagones, of which the sterigmata are simple, inarticulate, tubular, tapering pedicels, called "stylospores."

Pyrif'erus, Pyrifor'mis—Pear-shaped.

Pyxid'ium, Pyxid'ula—A capsule with transverse dehiscence, which separates it into two parts—the lid or operculum, and the urn or amphora. Applied also to the theca of Mosses, and fruit of Pimpernel, *Anagallis arvensis.*

Quad'ri signifies Four, in compounds, as in the following terms:—Quadrangula'ris. Quadran'gulus—Four cornered, approximating to the form of a quadrangular prism. Quadricru'ris—Having four legs or supports. Quadridi'gitate—Digitate in four divisions. Quadrifa'rius — Arranged in four rows. Quadrifo'liate—Synonym for "Quadridigitate." Quadri'fidus — Cleft in four parts. Quadri'jugus—In four pairs (*jugum*, a yoke).

Quar'tine, Quarti'na — A lamina, resembling a distinct integument, which occasionally occurs within the tercine or nucleus of ovules. Quaternate—When verticulate appendages are arranged in fours.

Quasiradia'tus—Where the florets of the ray, in the capitula of Compositæ, are inconspicuous. Also applied to the periclinium when it appears to be only slightly radiate.

Qui'nate, Quina'tus (Quinus, five)—Where five similar parts are arranged together.

Quincun'cial, Quincuncia'lis — In the order of the Quincunx. When the parts of a floral whorl, in æstivation, are five, and so disposed that two are exterior, one or two wholly interior, and the other two, or one, partially imbricate.

Quinquener'ved, Quinquener'vis, Quinquener'vius — When the primary nerves of a leaf, four in number, branch off from the base of the limb, so that (including the midrib or midnerves) it becomes furnished with five ribs. Quintu'plinervis—Where four distinctly-marked primary nerves of a leaf are given off from the midrib, but do not meet at the base as in quinquinerved.

Quinti'na—A lamina resembling a distinct integument, which occasionally invests the embryo, within the quartine.

Quintu'pled, Quintu'plex—Where the arrangement is a multiple of five.

Race—A variety of any species of which the individuals for the most part retain a marked peculiarity of character when raised from seed. To the Queenslander this can be explained by reference to the Peach-tree. Those which fruit prolifically about Brisbane may be said to belong to the China "race," those of Stanthorpe and the Southern Colonies to the old Persian "race." It will be observed that a great difference occurs in both leaf and fruit.

Race'me, Ra'cemus, Racemose—A form of inflorescence in which the flowers are borne on pedicels along a single undivided axis or rhachis. Racemifor'mis—Shaped like a raceme. Racemulosus — The diminutive of "Racemosus," the inflorescence in very small racemes.

Ra'chis or **Rha'chis**—That portion of an inflorescence, leaf, or frond upon which the ramifications are attached—that is, the continuation of the petiole or peduncle; also of the stipes in ferns. Rha'chilla is the axis of the spikelet of a grass.

Rachi'tis—A disease producing the abortion of fruit.

Ra'dial, Radia'lis—Belonging to the ray, in Compositæ, &c.

Ra'diant, Ra'diate, Radia'ted, Radiat'ing, Ra'dians, Radia'tus—Arranged like rays, or the extreme portion of rays, spreading from a common centre.

Rad'ical, Radica'lis—Proceeding from a point close to the summit or crown of the root. Radica'tion—The general disposition and arrangement of the roots.

Radicel'la and **Radi'cula**—The diminutive for "Radix," root.

Rad'icle, Radi'cula — The rudimentary state of the root in the embryo. Sometimes applied to small roots, or to the fibres about the tap-root.

Ra'dius-medul'laris—A pith or medullary ray.

Raisins, Drying of—See "Currants."

Ra'mal, Ramea'lis—Either originating from a branch, or merely growing on a branch.

Ramea'rius—Usually restricted to aerial roots, which originate from branches.

Ramen'tum — A shaving; a thin membranous scale-like lamina of cellular tissue, on the surface of plants. Ramenta'ceous, Ramenta'ceus — Bearing ramenta, as found on the stipes of many Ferns.

Ra'meous, Ra'meus—Synonym for "Ramal."

Ramiflo'rus—Where the flower or inflorescence occurs on the branches.

Ramifor'mis — Resembling a branch in form.

Ramo'sus—Full of branches.

Ra'mus—A branch; any subdivision of the stem, originating in the development of a caulinar leaf-bud. Ra'mulus—A little branch; also Ramun'culus, the ultimate subdivision in branching. Ramus'culum is synonymous. Ramus'culi is applied to the mycelium of some Fungi.

Rapa'ceus—Like the Radish root. Synonym for "Fusiformis."

Raphe', Rapha (A seam)—A fibro-vascular chord running from the placenta to the nucleus, through the chalaza.

Raphi'de, Ra'phida, Ra'phis (A needle)—A minute frequently acicular crystal of some insoluble salt formed in the interior of plants. These are abundant in the fruit of *Monstera deliciosa*, also in the stalk of Rhubarb (giving sign of their presence by grittiness of the tissue when cut through).

Ra′rus—Thinly set; where particular organs are not crowded, or fewer in number than is usual in allied species.

Ray—The outer florets in a capitulum in Compositæ. The outer flowers, when differently formed from the inner, in umbels.

Recep′tacle, Recepta′culum—In a capitate inflorescence the receptacle is the short, flat convex or conical axis on which the flowers are seated. It is also used for the torus of a single flower, and then is the extremity of the peduncle (above the calyx) upon which the corolla, stamens, and ovary are inserted. It is sometimes little more than a mere point or minute hemisphere, but it is often also more or less elongated, thickened, or otherwise enlarged. (See "Disk," or "Disc.") In ferns, that part of the vein on which the sorus is seated. The terms, however, are of varying signification, most usually implying a hollowed-out body containing other bodies. The same as stroma; stalk of a discocarp, &c., in litchens; cup of the thallus containing soredia.

Re′cess, Reces′sus—Synonym for "Sinus."

Recli′nate Recli′ning, Reclina′tus—So far bent from a perpendicular direction that the upper end becomes directed towards the ground. Also implies that one part is pressed down upon another.

Recondi′tus—Hidden.

Rectiflo′rus — Where the axis of the florets, in some Compositæ, are parallel to the main axis of the inflorescence. **Rectinervis** — Straight-nerved; synonym for "Parallelinervis."

Recur′ved, Recurva′tus, Recur′vus—Synonym for "Curved"; but especially when the bending is in a backward direction.

Reouti′tus — Having the appearance of being divested of epidermis.

Redu′plicate, Redu′plicative, Reduplica′tus, Reduplicati′ous — Valvate; with the edges reflexed.

Reflex′, Reflex′ed, Reflex′us—Turned back; where the apex is so far bent back as to approach the base. (See the hairs upon the stems of the common Morning Glory, *Ipomœa purpurea*.)

Refrac′tus—Broken; where a part is so suddenly reflex as to appear broken at the point where curvature takes place. (See the spikelets of the common grass, *Andropogon refractus*.)

Reg′ma—The capsula tricocca of Linnæus. It is a fruit containing three or more cells, few-seeded, superior, dry, the cells bursting from the axis with elasticity. The outer coat is frequently softer than the endocarpium or inner coat, and separates from it when ripe. The cells of this kind of fruit are called cocci. The castor oil plant furnishes a good example.

Regres′sus—Synonym for "Reflexus." Where a floral organ assumes the character of another which belongs to the whorl preceding that in position to which itself belongs.

Reg′ular, Regula′ris—Uniformity in structure or condition, where subordinate parts of the same kind closely resemble each other,. and are symmetrically arranged.

Rel′iquiæ—Leavings; appendages which wither without falling off. Synonym for "Induviæ."

Remo′tus—Synonym for "Rarus."

Re′niform, Renifor′mis, Rena′rius—Resembling the section, taken longitudinally, through a kidney.

Repand′ (Bowed), **Repan′dus**—When the margin is uneven, bespeaking the tendency to become sinuate.

Re′pens—Creeping; lying flat upon the ground, and emitting roots along the under surface. (See White or Dutch Clover, *Trifolium repens*.)

Replica′te, Replica′tive, Replicati′vus, Replica′tus (Unfolded) — Doubled down, so that the upper part comes in contact with the lower. In estivation the fold is inwards, in vernation backwards.

Re′plum (A door cheek)—The persistent portion of some pericarps, after the valves have fallen away. The Matchbox Bean is a good example.

Reproduc′tive Organs—The parts of a plant immediately concerned in the formation of seed, sporules, &c.

Rep′tans—Creeping along. Synonym for "Repens."

Resinif′erus—Secreting resin. Examples: *Aphanopetalum resinosum* and *Eucalyptus resinifera*, the "Jimmy Low."

Rrspira′tion, Respira′tio (Breathing)—A function of the leaf and other parts, furnished with stomata, by which carbonic acid is decomposed, and carbon assimilated into an organic compound.

Res′tans (Remaining) — Synonym for "Persistens."

Restib′ilis (Producing every year) — Synonym for "Perennis."

Resting Spore—A spore which becomes quiescent, or rests for a period more or less long, before germination.

Resu′pinate, Resupina′tus (Lying on the back)—So turned or twisted that the parts naturally the undermost become the uppermost, and *vice versâ*.

Re′te—A net. **Retic′ulate, Reticula′tus**—Made like a net, resembling network. **Retic′ulum** — A little net. **Reti′ferus**—Net bearing. **Retifor′mis**—Net-like, &c. These terms are applied to veins, as well as to any parts of plants with a net-like appearance, as the filamentous web-like appendages often attached to species of Fungi. (See the veins of the leaf of *Lyonsia reticulata*, a common South Queensland climber.)

Retinac′ulum (A stay or hold-fast)—A viscid gland connected with the stigma in Orchideæ and Asclepiadeæ, which retains the pollen-mass.

Retrac′tus (Drawn back)—Where cotyledons are so far prolonged at their base as to completely conceal the radicle.

Retrocurva'tus—Synonym for "Recurvus." Retro'flexus—Synonym for "Reflexus." Retrofrac'tus — Synonym for "Refractus." Retror'sum, Retror'sus—Used synonymously with "Recurvus" and "Reflexus." Retrover'sus—Synonym for "Inversus."

Retuse', Retu'sus (Blunted)—Having a slight depression or sinus at the apex. (See the leaves of an old plant of the common *Sida* weed.)

Revolu'bilis (Capable of being rolled back)—Synonym for "Revolutivus," which implies that an organ has its margins rolled backwards upon the under surface.

Re'volute, Revolu'tus (Turned back)—Rolled backwards from the extremity upon the underside or surface, as the flower lobes of *Jasminum revolutum.*

Rha'chis—In ferns, that part of the stem of the frond upon which the pinnæ are placed, or the portion above the stipes. Rhachil'la—The axis of a grass spikelet.

Rheg'ma—See "Regma."

Rhizan'thus—Synonym for "Radicalis."

Rhi'zina—The peculiar roots of Mosses and Lichens.

Rhizoblas'tus—An embryo provided with an incipient root.

Rhizocar'pous, Rhizocarpia'nus, Rhizocar'picus—An herbaceous perennial.

Rhizo'genum—The dilated base of the frond in certain Algæ, from which proceed root-like appendages by which it adheres to its support.

Rhizoi'deus—Resembling a root in general appearance.

Rhizo'me, Rhizo'ma—A prostrate or subterranean stem, from which roots are emitted, and scaly leaves or branches given off at the joints. Rhizomorphus—Assuming the appearance of a root. (See the underground stems of Ferns, &c.)

Rhizo'philus—Growing attached to roots.

Rhi'zula—The roots emitted by the sporules of Mosses, &c.

Rhodo-leu'cus—A combination of red and white.

Rhombifo'lius—Where the leaf is rhomboidal. Rhom'boid, Rhomboi'dal, Rhombe'us, Rhombifor'mis, Rhomboi'deus, Rhomboida'lis—Rudely approximating to the form of a rhomboid; that is to say, to a quadrangular figure (not a square) whose sides are equal. (See the foliage of a strong healthy plant of the *Sida* weed).

Rhynchos'porus — Where a fruit terminates in an elongated projection. (See nuts of *Rhynchospora aurea*, a common sedge.)

Rig'id, Ri'gidus—Stiff, with slight or no flexibility, as the American Aloe leaves.

Ri'ma—A cleft; an ostiolum which has the appearance of a small cleft or chink. Rima'tus, Rimo'sus—Full of clefts; where the surface is covered with cracks or fissures.

Ri'miform—Having a longitudinal chink or furrow.

Rin'gent, Rin'gens—Grinning. A bilabiate corolla whose lips are widely separated.

Ri'pis, or Rhi'pis, Rhi'pidos—A fan. (See *Polyporus rhipidium.*)

Rivula'ris—Either growing in water-courses or on their banks.

Rockery.—There is no necessity for an explanation of this term; but a few words as to construction may be given. In this artificial arrangement of stonework, consideration must be paid to the class of plants it is intended to hold. The site chosen should always be sheltered from winds. It should be as simple as possible, free from the drip of trees. The rock of which it is constructed should be of a porous character. The size of the interstices left for the reception of plants depends also upon the kinds it is intended to grow; a sandy peaty soil is best for filling up between the rocks, and some of these latter should be large enough to afford shade to small shade-loving plants. Every portion must be well-drained, for, though plants may revel in moisture overhead at certain seasons, they, with but very few exceptions, will not live with stagnant water at their roots.

Root—The root, or descending axis, is that part of a plant which grows downwards from the stem, divides and spreads in the earth or water, and absorbs food through the extremities of its branches. They ordinarily produce neither buds, leaves, nor flowers. Their branches, called *fibres*, when slender and long, proceed irregularly from any part of their surface. Although roots proceed usually from the base of the stem or stock, they may also be produced from the base of any, especially if the bud lie along the ground, or is otherwise placed by nature or art in circumstances favourable for their development, or, indeed, occasionally from almost any part of the plant. They are then often distinguished as *adventitious*, but this term is by some applied to all roots which are not in prolongation of the original radicle. Roots are *fibrous* when they consist chiefly of slender fibres; *tuberous*, when either the main root or its branches are thickened into one or more short fleshy or woody masses called *tubers; tap-roots*, when the main root descends perpendicularly into the earth, emitting only very small fibrous branches. The stocks of a herbaceous perennial, or the lower parts of the stem of an annual or perennial, or the lowest branches of a plant, are sometimes under ground and assume the appearance of roots; such, however, are called rhizomes, and may always be distinguished from the true root by the presence or production of one or more buds, or leaves, or scales. Although the root is constructed generally on the same plan as the stem, yet the regular organization, and the difference between Exogens and Endogens is often disguised or obliterated by irregularities of growth or by the production of large quantities of cellular tissue filled with starch or other substances. There is seldom, if ever, any distinct pith; the concentric circles of fibro-vascular tissue in Exogens are often very indistinct or have no relation to seasons of growth, and the epidermis has no stomates. Roots grow in length constantly and regularly at the extremities only of their fibres, in proportion as they find the requisite nutriment. Their fibres proceed irregularly from any part of their surface without previous indication, and when their growth has been stopped for a time, either wholly by the close of the season or partially by a deficiency of nutriment at any particular spot, it will, on the return of favourable circumstances, be resumed at the same point, if the growing extremities be uninjured. If during the dead season, or at any other time, the growing extremity is cut off, dried up, or otherwise injured, or stopped by a rock or other obstacle opposing its progress, lateral fibres will be formed on the still living portion, thus enabling the root as a whole to diverge in any direction, and travel far and wide when lured on by appropriate nutriment. This growth is not, however, by the successive formation of terminal cells attaining at once their full size. The cells first formed on a fibre commencing or renewing its growth will often dry up and form a kind of terminal cap, which is pushed on as cells are formed immediately under it; and the new cells, constituting a greater or lesser portion of the ends of the fibres, remain some time in a growing state before they have attained their full size. The functions of the root are—first, to fix the plant in or to the soil or other substance on which it grows; second, to absorb nourishment from the soil, water, or air into which the fibres have penetrated (or from other plants in the case of parasites), and to transmit it rapidly to the stem. The absorption takes place through the young growing extremities of the fibres, and through a peculiar kind of hairs or absorbing organs which are formed at or near those growing extremities. The transmission to the stem is through the tissues of the root itself. The nutriment absorbed consists chiefly of carbonic acid and nitrogen, or nitrogenous compounds dissolved in water. Third, in some cases the roots secrete or exude small quantities of matter in a manner and with a purpose not satisfactorily ascertained.

Ro'ridus—Dewy; covered with little transparent elevations of the parenchyma which have the appearance of fine drops of dew.

Rose-bushes, To Destroy Aphides on—See "Aphides."

Rose'us—Rose-coloured; pale red.

Ro'tate, Rota'ceus, Rotæfor'mis, Rotif'ormis, Rotatus—When a monopetalous corolla has a very short tube and spreading limbs, thus supposed to resemble a wheel. The corolla of the common Pimpernel, *Anagallis arvensis*, is rotate.

Rostel'lum—A term applied to a process which intervenes between the anther and stigma of an Orchid flower, and which has been aptly termed the floor of the former and the roof of the latter.

Rostella'tus—Furnished with a stiff and often somewhat hooked termination, supposed to resemble a little beak. Rostra'lus—Beaked. Ro'strum—A beak. (See flower-buds and fruit of *Eucalyptus rostrata*, a tree very abundant along the Condamine River.)

Rota'tion, Rota'tio—The internal circulation of fluids in the cells of plants.

Rotation Cropping should be carried out as far as possible both in farm and garden. In changing crops it is best to avoid planting any to succeed others which are nearly allied. Thus it will be found advantageous for Cabbage, Turnips, &c., to follow Beans, Peas, Onions, &c. Peas have been found to do well when planted after Celery. An American writer says—First year, Cabbage; second year, Onions; third year, Carrots, Beets, or Parsnips; fourth year, Potatoes or Turnips; fifth, Celery, Spinach, or Lettuce. No doubt this system could be advantageously applied to fruit-growing in the orchard, &c., by allowing the land to be occupied by one kind of fruit but for a few years, when the trees should all be destroyed and as dissimilar as possible a kind planted in their place. The time allowed to each sort of fruit would vary according to kind. This mode would be particularly advantageous where the subsoil was sour or otherwise bad.

Rotunda'tus — Roundish. Rotun'dus—Round; synonym for "Orbicularis." (See *Phebalium rotundifolium.*)

Rubel'lus—Somewhat red. Rubes'cens—Growing red. Ru'bens—Red. Rubicun'dus—Ruddy. Ru'ber—Pure red of a deep tint. Ru'tilans, Ru'tilus (Fiery red)—Of a brick-red colour; red, with a moderate portion of grey, also glittering with red.

Rubico'lus—Parasitic on, or attached to, the stems or leaves of a *Rubus*.

Rubigin'eus, Rubigino'sus—Rusty; of a brownish red tint; red, with much grey. Rufescens, Rufus — Brown inclining to red.

Rudera'lis—Growing in waste places, or among rubbish. Example, the common weed, *Lepidium ruderale*.

Ru'dimentary—Either in an early stage of development, or in an imperfectly developed condition.

Ru'ga— A wrinkle. Rugose', Rugo'sula, Rugo'sus—Rough, wrinkled. Rugulo'sus—Where a surface is covered with wrinkles. (See the leaves of the common Sage plant.)

Rumina'ted, Rumina'tus (Chewed)—When the hard albumen of some seeds is penetrated by irregular channels, filled with softer cellular matter. For example, take a Nutmeg.

Run'cinate, Runcina'tus — Where the large marginal incisions of a leaf are directed in a curved and serrated manner towards the base. (See leaf of Dandelion.)

Rupes'tris, Rupic'olus—Growing naturally upon rocks.

Rup'tilis—Bursting irregularly, without any defined line of dehiscence.

Rura'lis—Growing in situations peculiar to country places, as on the thatch of a cottage.

Ry'tidocarpus — Where the surface of the fruit is covered with wrinkles. **Rhy'tidophyl'lum** — See *Desmodium rhytidophyllum.*

Sabuli'colus—Growing in sandy places. **Sabulosus**—Sandy.

Sac—A vesicle in the nucleus, within which the embryo is formed. **Sac'cate**—A spur which is short and round like a little bag. **Sac'ciform, Saccifor'mis**—Having the general appearance of a bag. **Sac'culus**—A little sack; the peridium of some Fungi.

Sacchara'tus Sacchari'nus—Having a sweet taste.

Sa'gittate, Sagitta'lis, Sagitta'tus—Pointed at the apex, and the base prolonged backwards from the sides into two acute ears, shaped like the head of an arrow. (See *Rumex acetosella*, the common Sorrel.)

Salsugino'sus—Growing in salt places or salt-marshes.

Sa'mara—A nut with a wing at its upper end; or, in other words, a compressed, four-seeded, coriaceous or membranaceous indehiscent pericarp, with a membranaceous expansion at the end or edges.

San'guine, Sangui'neus—Red with much grey; blood-colour, as *Holmskioldia sanguinea.*

Sap, Sapa—A general term for the juices of a plant. The ascending sap is the crude material introduced by absorption; the descending sap (called properly the juice) is the elaborated material, which then contains organized compounds, suited to the nutrition of the plant.

Sap'rophyte—A plant which lives upon dead organic matter, thus differing from the parasite which lives upon living organic matter.

Sa'pidus—Possessing a pleasant taste.

Sapona'rius—Possessing detergent properties, like Soap.

Saponaceous—Soapy. The foliage of the Red Ash, *Alphitonia*, would seem to possess this property to a high degree, for we find children of the country schools taking a few of these leaves in preference to soap to remove ink-stains from their fingers.

Sar'cocarp, Sarcocar'pium—The intermediate and more succulent part of the pericarp which lies between the epicarp and the endocarp.

Sarcoder'ma, Sarcoder'mis — A layer more or less apparent, and sometimes fleshy, between the Exopleura and Endopleura.

Sarcoi'des—Having the general appearance of a piece of flesh.

Sarcolo'beæ—The most extensive of two primary groups into which the Leguminosæ may be divided, characterised by the cotyledons being thick and fleshy.

Sarco'ma—A fleshy disk.

Sarmenta'ceous, Sarmenta'ceus—When a branch approaches to or assumes the character of a runner. **Sarmentiferus, Sarmentosus**—Bearing long flexible branches, which require support to prevent their trailing on the ground. **Sarmen'tum**—A runner.

Sautellus — Synonym for "Bulbillus." From *Sautelles*, an attendant.

Saxa'tillis—Living among rocks. **Saxi'colus**—To inhabit rocks. **Saxo'sus**—Stony; growing spontaneously in rocky and stony stations.

Sca'bridus, Scabrius'culus — Somewhat rough or harsh to the touch. **Sca'brous, Sca'ber**—Where a sensation of harshness or roughness is produced by stiff pubescence or scattered tubercles.

Scabri'ties—Minute scaly pubescence producing a roughness of the surface.

Scala'riform, Scala'riformis — When vascular tissue is transversely striated, as if barred, like the steps of a ladder.

Scale Insects—The following are the recommended remedies for this pest:—The best natural remedy is to encourage the multiplication of certain minute insects belonging to the great division *Hymenoptera*, which are parasitic in the Scale Insects, and destroy large numbers of them. Amongst the many artificial remedies the following may be noted as useful:—Soap solution (¼ lb. of soap in 1 gallon of water) or kerosine solution (about 1 gill in 5 gallons of water), syringed or sprayed over the plants every second day; phenyle, in a strength of from 3 to 6 teaspoonfuls to 4 gallons of water, applied at intervals of eight days; alkaline washes, such as concentrated lye of wood-ashes or of coarse potash, which, used with a brush, frees the branches from the insects; strong solution of tobacco; and animal oils—*e.g.*, whale oil will destroy these insects by suffocation, the oil closing the breathing pores along the sides of their bodies.

Scalpel'liformis—Shaped like the blade of a penknife, and often with the surface set vertically with respect to the axis of vegetation.

Scan'dens — When stems which would otherwise trail upon the ground are raised by the support of tendrils, claws, &c. (See *Cobæa scandens, Lygodium scandens.*)

Scape, Sca'pus, or Radical Peduncle, is a leafless peduncle proceeding from the stock, or from near the base of the stem, or apparently from the root itself. **Scapiflorus** — Having the flowers on scapes. (See the stalk of an inflorescence of *Crinum.*)

Scapel'lus — Diminutive of "Scapus." The neck or caudicule of the germinating embryo.

Scaphi'dium—The spore-case of Algæ.

Scario'se, Scari'osus — Thin, dry, and membranous. (See the glumes of *Chloris scariosa.*)

Scar'rose—Synonym for "Squar'rose."

Schista'ceus, Schisto'sus—Of the colour of common slate; blue with much grey.

Sci'as, Sci'ados—A shade, an umbrella.

Sciuroi'des — Curved and bushy like a squirrel's tail.

Scler'oid, Scleroi'dus—Of a hard texture.

Scle'rogen —A non-nitrogenized compound, which fills the cells of woody fibre, and forms the hardened bony matter in some fruits.

Sclerophyl'lus—With the leaves stiff and hard. **Scleropoidus**—When persistent peduncles harden and become thorny.

Scobicula'tus, Scobifor'mis — In fine grains like saw-dust.

Scobi'na (A file)—The immediate support to the spikelets of grasses. **Scobina'tus** — Where the surface feels rough like a rasp.

Scorpio'id, Scorpioi'dal, Scorpioi'des, Scorpioida'lis—Where a main axis of inflorescence is curved in a circinate manner, like the tail of a scorpion. (See inflorescence of the Heliotrope.)

Scrobicula'tus, Scrobiculo'sus—Pitted. (See the Ditch Millet, *Paspalum scrobiculatum.*)

Scro'tiform, Scrotifor'mis — Pouch-shaped.

Scu'tate, Scuta'tus — Synonym for "Buckler-shaped." **Scutum** (A shield) —A circular disk-like space over the stigma, in the midst of the orbiculus in some plants.

Scutel'la — A dish or saucer. Also, **Scutel'lum**, a sessile apotheciam bordered by the substance of the thallus itself.

Scy'pha, Scy'phus—A cup-shaped podetium. **Scyphiformis** — Cup-shaped. **Scy'phulus** (Diminutive for "Scyphus")—The cup-like appendages from which the seta of Hepaticæ arises.

Scyti'num—A tough form of legume, woody externally and pulpy within.

Seba'ceus—Looking like lumps of tallow. **Sebiferus**—Producing vegetable wax. (See fruit of *Excæcaria sebifera,* the Chinese Tallow tree.)

Seed-sowing—The seedsmen are frequently blamed as selling their customers bad seed, when in all probability the fault is rather in the sowing. Seeds should never be covered with more soil than about their own thickness. Very minute kinds should not be covered at all, merely sown on the surface of the moistened soil, with perhaps a slight sprinkling of sand; carefully water, and remember that after a seed has once started into life its course cannot be interrupted with impunity, and that in its early life it is wholly dependent upon surface moisture. These remarks apply particularly to sowings in pots.

Sec'tile, Sec'tilis—Subdivided into small portions. **Sec'tus** (Cut)—Parted.

Secu'nd, Secunda'tus, Secun'dus—When organs are all turned to the same side of the axis round which they are arranged. **Secundiflorus**—Where the flowers are turned to one side.

Secun'dine, Secundi'na—The inner or first-developed integument to the nucleus of the ovule.

Seed—The fertilized ovule.

Segeta'lis (*Seges,* a cornfield)—Growing among corn, or on corn, as the "smut" *Ustilago segetum.*

Seg'ment, Segmen'tum—One of the subdivisions of any part or organ.

Segreg'ate—To separate from others, or set apart.

Sellæfor'mis—Saddle-shaped.

Se'men—Seed.

Sem'i, as a prefix, denotes half, partial, or one-sided. Thus :—**Semi-adherens**—The adhesion extending through a portion of the usual conditions from below upwards. **Semi-amplexicau'lis**—Half-clashing. **Semi-barbatus** — Part bearded, as in the case of the stamens of *Bulbine semi-barbata.* **Semi-cylin'dricus** and **Semi-te'res** both imply that the one side is cylindrical and the other flat.

Se'minal, Semina'lis—Whatever has reference to some portion of the seed.

Sempervi'reus—With green leaves or surface throughout the year.

Sena'rius—Arranged in six together of the same kind.

Sensi'bilis — Sensitive, or manifesting "irritability." Example: *Minosa pudica,* the common Sensitive Plant.

Se'pal, Se'palum—One of the foliaceous expansions forming the subordinate parts of the calyx. **Sepaline', Se'palous, Sepali'nus**—Having reference to sepals. **Sepaloid'**—Looking like a sepal.

Sepi'colus—Plants whose usual habitat is near a hedge *(sepes).* **Se'pium**—Growing in the hedges or upon the hedge-banks, or used for forming hedges, as *Cæsalpinia sepiaria.*

Septena'tus, Septe'nus—Where either subordinate parts, or subdivisions of one part, amount to seven.

Sep'tum (A hedge)—A partition of any kind; but more especially one which subdivides the ovary or fruit, and originates in the union of a portion of the contiguous carpels extending to the axis. **Septatus**—Possessing septa.

Seria'lis—Arranged in rows.

Seri'ceus—Covered with fine, rather long, close, and soft hair, which has a silky appearance. (See the inflorescence and joint of stem of the Blue Grass, *Andropogon sericeus.*)

SERO'TINUS—Late; when a plant flowers later in the year than others to which it is related.

SER'RATED, SERRA'TUS—When the margin is cut into teeth like those of a saw. SERRÆFO'LIUS, SERRATIFO'LIUS—Having serrated leaves. SERRULA'TUS—Synonym for "Denticulatus." (See leaves of *Photinia serrulata.*)

SER'TULUM (Diminutive for *Sertum*, a garland)—Synonym for "Umbella," when simple.

SES'QUI—This term, prefixed to the Latin name of a measure, shows that such measure exceeds its due length by one-half; thus SESQUIPEDA'LIS means a foot and a-half.

SESSI'LE, SES'SILIS (As it were sitting)—When an organ is attached to its support without the intervention of some intermediate part; as when a leaf is without petiole (sessilifolius), a flower without a pedicle (sessiliflorus). Thus the flowers of a spike are sessile, while those of the raceme are pedicellate.

SE'TA (A bristle)—Any stiff hair. The stalk supporting the theca of Mosses. The arista of grasses, when it is not below the apex, but forms a termination to any of the floral bracts. SETACEO-SERRATUS—Where the serratures taper off to bristle-like points. SETACEOUS, SETACEUS—Possessing the characters ascribed to a seta. SETIFORMIS—Shaped like a seta, or bristle-like. SETIGERUS—Furnished with one or more setæ.

SEX, SEX'US (A sex)—When stamens or pistils alone, or when both these organs are formed in flowering plants, the flowers are termed male, female, or hermaphrodite accordingly. SEXTU'PLEX—Where a part is six times repeated.

SEXAN'GULAR, SEXANGULA'RIS—With six angles, or decided projections from the surface. SEXFA'RIUS—Presenting six rows, extending longitudinally round an axis.

SIAL'AGOGUE—Having the power of exciting saliva, as Ginger, *Zingeber officinalis.*

SIC'CUS (Dry)—As HOR'TUS-SIC'CUS, a dry garden; synonym for "Herbarium."

SIGILLA'TUS—When a rhizome is marked by scars left by the fall of branches successively developed upon it.

SIG'MOID, SIGMOI'DEUS—Curved in two directions like the letter S.

SI'LICLE, SILIC'ULA (A little pod)—Formed like a siliqua, but where the length never exceeds four times the breadth. (See the cruciferous plant called "Shepherd's Purse," *Capsella Bursa-pastoris.*)

SIL'IGUA and SILIC'ULA are terms applied to the fruits of Cruciferæ. Dr. Lindley's definition:—Siligua—One or two-celled, many seeded, superior, linear, dehiscent by two valves separating from the replum; seeds attached to two placentæ adhering to the replum, and *opposite* to the lobes of the stigma. The dissepiment of this fruit is considered a spurious one formed by the projecting placentæ, which sometimes do not meet in the middle; in which case the dissepiment or phragma has a slit in its centre, and is said to be *fenestrate.* Silicula—This differs from the latter in nothing but its figure, and in containing fewer seeds. It is never more than four times as long as broad, and often much shorter. (See the seed-pods of Turnip or Cabbage.)

SIMPLICIS'SIMUS — Without the slightest tendency to subdivision or ramifications.

SINEN'SIS — Synonym for "Chinensis"; belonging to China, as *Wistaria chinensis.*

SINIS'TRORSE, SINISTROR'SUM (Towards the left hand)—Where the coils of a spiral would appear, to a person in the axis, to rise from right to left.

SIN'UATE, SINUA'TED, SINUA'TUS (Crooked)—A margin rendered uneven by alternate rounded and rather large lobes and sinuses. SINUATO-DENTATUS—Between sinuate and dentate. SINUOLA'TUS—Synonym for "Repandus." (See the leaves of young plants of *Stenocarpus sinuatus.*)

SI'NUS—A bay. The re-entering angle or depression between two projections or prominences.

SIPHONI'PHYTUM—A composite plant with all the florets floscular.

SI'TUS (Situation)—The peculiar mode in which parts are disposed, as well as the position they occupy.

SOILS, CLASSIFICATION OF—

Alluvial Soils are such as have been formed by the washings of streams. They are generally loamy, and very fertile.

Calcareous Soils are those in which lime, exceeding 20 per cent., becomes the distinguishing constituent. Calcareous soils may be either calcareous clays, calcareous sands, or calcareous loams, according to the proportions of sand or clay which may be present in them.

Heavy Soils—The heavy or clayey soils are also known as wet and cold, from their affinity for water. In dry weather, however, they are liable to bake, or become hard and brick-like. They are difficult to work, and, till much modified by art and labour, generally unproductive. These require thorough underdraining. In small gardens sand may be applied to this soil with advantage. Lime is valuable in improving such soil; also ashes, and coarse vegetable manures. They should also be frequently worked.

Light Soils—The light or sandy and gravelly soils are denominated dry and warm, because they permit the water to pass readily through them. They are subject to drought, and have the further disadvantage of allowing a large proportion of the manure applied to them to pass through into the subsoil. They are easy to work, and crops can be brought to perfection much earlier on them than on clayey soils. The addition of a clayey soil will be found of advantage to this class of soil. If resting upon a clayey bottom this may be effected by deep working.

Loamy Soils—A mixture of from 15 to 60 per cent. of sand with clay forms a loamy soil. If the sand does not exceed 30 per cent., it is called a clay loam; more than 30 per cent. constitutes it a sandy loam.

Marly Soils—Soils containing lime, but in which the proportion does not exceed 20 per cent., are sometimes called marly.

Vegetable Moulds—When decayed vegetable matter exists in so great proportion as to give the predominant character to a soil, it receives the name of vegetable mould. These are of various kinds, and may be either clayey, sandy, or loamy, according to the predominant character of the earthy admixtures.

Subsoils—The productiveness of a soil depends to a considerable extent upon the nature of the subsoil or bed on which it rests. A clayey subsoil is unfavourable, as it renders the soil wet and cold. Loose subsoils, consisting of gravel or sand, are also undesirable, on account of the facility with which moisture and the soluble portions of manures escape into them. Calcareous subsoils are considered best.

SMARAG'DINUS—Pure green, without any admixture of grey; resembling an emerald.

SO'BOLES — A shoot. SOBOLIF'ERUS — Bearing shoots; applied to creeping stems, which are slender, and creep along horizontally below the surface of the earth, emitting roots and new plants at intervals.

SOOT is recommended as an excellent manure for peas, onions, carrots, and all garden crops. Mixed with rain-water in the proportion of one table-spoonful to a quart of water, may be used as a liquid manure for pot plants; it is improved, however, by addition of the dung of domestic poultry. The rule for all liquid manures is to apply them weak and often.

SO'LÆFORM—Slipper-shaped.

SOLUBIL'ITY, SOLUBIL'ITAS—The property of separating into distinct portions by a kind of spurious articulation; as when certain legumes become transversely divided between the spaces occupied by the seeds. SOLUTUS (Loosed)—Separate.

SOM'NUS — Sleep. SOMNIF'ERUS — Causing sleep, as the Poppy from which the opium is obtained is called *Papaver somniferum.*

SOR'DIDUS (Dirty) — When a colour contains more or less admixture of grey. SORDIDIS'SIMUS — When the grey greatly predominates.

SORE'DIUM, SORE'UMA—A patch of propagula (otherwise termed gonidia), which have burst through the surface of the thallus of Lichens.

SORO'SA, SORO'SIS, SORO'SUS—A spike or raceme converted into a fleshy fruit by the cohesion in a single mass of the ovaria and floral envelopes. Examples are found in the Pineapple, Mulberry, Jack-fruit, &c.

So'RUS—A patch of the aggregated thecæ in Ferns.

SPADI'CEUS—Bay; clear reddish-brown; red, with small admixture of grey.

SPA'DIX—The axis of a spiked inflorescence among monocotyledons, when the flowers are densely aggregated. It is usually, but not always, accompanied by one or more spathes, and is frequently fleshy. (See Cunjevoi, *Colocasia macrorrhiza.*)

SPANAN'THUS—Bearing few flowers.

SPAR'SUS (Scattered) — Irregularly, and often scantily, distributed, as SPARSIFLORUS, having few scattered flowers; SPARSIFOLIUS, where the leaves are distantly scattered over the herbage.

SPA'THA, SPATHE—A broad sheathing leaf, enclosing flowers arranged on a spadix; in other words, a bract or floral leaf enclosing the inflorescence of some monocotyledons. SPATHA'CEUS—Either furnished with a spathe, and more especially if it is large; or having the general appearance of a spathe. (See Cunjevoi flower, *Colocasia macrorrhiza.*)

SPA'THULATE, SPA'TULATE, SPATHULA'TUS —More or less rounded towards the summit, and narrowed towards the base; somewhat spoon-shaped. (See the leaves of the English Daisy.)

SPE'CIES—A species comprises all the individual plants which resemble each other sufficiently to make us conclude that they are all, or may have been all, descended from a common parent. These individuals may often differ from each other in many striking particulars, such as the colour of the flower, size of the leaf, &c., but these particulars are such as experience teaches us are liable to vary in the seedlings raised from one individual.

SPECIO'SUS—Very handsome or ornamental. (See the Pink Water Lily, *Nelumbium speciosum.*)

SPEIRE'MA—Synonym for "Propagulum" in Lichens, otherwise called "Gonidium."

SPER'MA, SPER'MUM—The seed.

SPERMAGO'NES—Minute open cavities in the thallus of Lichens, containing filaments; "sterigmata."

SPERMAGO'NIA — Spore-cases. SPERMAGO'NIUM—Receptacle in which spermatia are abjointed.

SPERMATOZO'A, SPERMATOZOIDS—Thread-like bodies possessed of motion, supposed to have fecundative power.

SPERMAN'GIUM—The spore-case of Algæ. SPERMATIDIUM, SPERMATIUM — The spore of Algæ. Also non-motile gamete-cell which conjugates with a trichogone. The male sexual function of all spermalia is not yet demonstrated.

SPERMAPH'ORUM, SPERMOPH'ORUM—Synonym for "Placenta," and also for "Funiculus."

SPERMAPO'DIUM, SPERMAPODOPH'ORUM — The branched gynophorus of Umbelliferæ.

SPERMA'TO-CYSTID'IUM — Synonym for "Anthera," and more especially for the supposed anther of Musci, otherwise called Antheridium.

SPERMATOIDI'UM—A case containing the progagula (otherwise gonidia) in Algæ.

SPERMI'DEUS—Producing seed.

SPERMI'DIUM—Synonym for "Achenium."

SPER'MODERM, SPERMODER'MIS—The skin or integument of a seed, formed by the union of the several coats which invested the embryo in its earlier stages.

SPERMO'PHORUM — Synonym for "Placenta." SPERMOTHE'CA—Synonym for "Pericarp."

SPHÆREN'CHYMA—Cellular tissue in which the separate vesicles are more or less spherical.

SPHÆROBLAS'TUS—When a monocotyledonous embryo produces a cotyledon, during germination, which terminates in a swollen globular apex.

SPHÆROCAR'PUS—When a fruit is globular.

SPHÆROCE'PHALUS—Where the capitulum is globular.

SPHÆRO'PHYTUM—Synonym for "Filix," a fern; the fructification (the theca) being globular.

SPHÆ'RULA, SPHE'RULA (Diminutive for *Sphæra*, a sphere)—A more or less rounded peridium, discharging at the summit its sporidia.

SPHÆRULI'NUS — Synonym for "Orbicularis."

SPHALEROCAR'PIUM, SPHALEROCAR'PUM—A one-seeded indehiscent pericarp, invested by a persistent succulent calyx, assuming the appearance of a berry, hence the name "deceiving fruit." For example see *Taxus*.

SPHE'RICAL, SPHÆ'RICUS—Closely approximating to the form of a sphere. SPHEROI'DAL, SPHÆROIDA'LIS — Approximating to the form of a sphere.

SPI'CA—A spike is a form of infloresence with sessile flowers along a simple undivided axis or rhachis. SPICA'TUS, SPICIF'ERUS, SPICIFLO'RUS—Where the flowers are disposed in a spike. SPICIFOR'MIS—Assuming the appearance of a spike. SPICI'GERUS—Synonym for "Spiciferus."

SPI'CULA—A spikelet. SPICULIF'ERUS — When flowers are arranged in spikelets.

SPI'CULATE, SPICULA'TUS (Made sharp)—Where a surface is covered with fine pointed fleshy appendages. Also (from *Spica*, a spike) where a spike is composed of several smaller spikes (or rather spikelets) crowded together.

SPI'CATE, SPICA'TUS—Bearing the flowers in a form of inflorescence called a spike.

SPIKELET—A small spike, of which several, aggregated round a common axis, constitute a "compound spike." The term is more especially applied to the spiked arrangements of two or more flowers of grasses, subtended by one or more glumes, and which are variously disposed round a common axis.

SPI'NA (A thorn)—A spine or stiff sharp-pointed process, containing some portions of woody tissue, and originating in the degeneracy or modification of some organ, as of a branchlet, leaf, or stipule. It is a synonym for "Thorn." SPINEL'LA (diminutive for *spina*, a thorn). SPINES'CENT, SPINES'CENS — Terminating in a spine. SPINIF'ERUS — Producing or bearing spines. SPINIFO'LIUS—Where the leaves are spinous. SPINIFOR'MIS — Having the general appearance of a spine. SPINOCAR'PUS—Where the fruit is spinous. SPI'NOUS—Bearing, or covered with, spines. SPINULIF'ERUS, SPINULO'SUS — Furnished with very small spines. SPINULIFLO'RUS — When the sepals terminate in acute points.

SPI'RAL, SPIRA'LIS—Arranged in a spiral, or twisted spirally round an axis. Spiral vessels or tracheæ are membranous tubes with conical extremities; their inside being occupied by a fibre twisted spirally, and capable of unrolling with elasticity. To the eye they when at rest, look like a wire twisted round a cylinder that is afterwards removed. For the purpose of finding them for examination, the stalk of a Strawberry leaf may be used; in these they may be readily detected by gently pulling the specimens asunder, when they unroll, and appear to the naked eye like a fine cobweb. (See also the spirally coiled peduncle of the Eel-grass, *Vallisneria spiralis*, a common fresh-water plant.)

SPITHAMÆ'US (*Spithama*, a span)—About seven inches; the average space between the extremities of the thumb and forefinger when expanded.

SPLEN'DENS — Glittering. (See the Treasure-flower, *Gazania splendens*.)

SPODO'CHROUS—Of a grey tint. Spodo, in Greek compounds, signifies ash-grey.

SPON'GIOLE, SPONGI'OLA (Diminutive for *Spongia*, a sponge)—The extremity of each fibre of a root, devoid of epidermis, and capable of absorbing moisture from the surrounding medium. The term is extended to the stigma (*Spongiola pistillaris*) and certain parts on the surface of seeds possessing a similar property of absorption (*Spongiola seminalis*). SPONGY, SPONGIOSUS—Where the cellular tissue is copious, forming a sponge-like mass, often replete with moisture.

SPORA'DIC, SPORA'DICUS—When a given species occurs in more than one of the separate districts assigned to particular Floras.

SPORAN'GIUM, SPORANGIA—A spore-case, having spores produced within it.

SPORE-CASE—Case containing the spores of Ferns and their allies.

SPORIF'EROUS—Bearing spores.

SPOROCAR'PIUM—Covering or capsule enclosing spores, or carpospores.

Spo'roderm—The coating or covering of a spore.

Spo'rules—Minute spore-like bodies.

Spumes'cent, Spumes'cens (Foaming)—Having the appearance of foam or froth.

Spur, Spurred—When the tube or the lower part of the petal has a conical hollow projection, compared to the spur of a cock. (See flowers of Larkspur and *Dendrobium.*)

Squa'mæ, Scales—Leaves very much reduced in size, usually sessile, seldom green or capable of performing the respiratory functions of leaves. In other words, they are organs resembling leaves in their position on the plant, but differing in size, colour, texture, and functions. They are most frequently on the stock of perennial plants, or at the base of annual branches, especially on the buds of future shoots, when they serve apparently to protect the dormant living germ from the rigour of winter. In the latter case they are usually short, broad, close together, and more or less imbricated—that is, overlapping each other like the tiles of a roof. It is this arrangement as well as their usual shape that has suggested the name of scales, borrowed from the scales of a fish. **Squamella**—A small scale-like bract, frequent on the receptacle of Compositæ. **Squamo'se, Squamo'sus**—Covered with scales; or composed of scale-like appendages. **Squamulo'sus**—Covered with small scales.

Squarrose', Squarro'sus—Where appendages diverge at a large angle from the axis or the plane to which they are attached; thus imbricated scales, leaves, or bracts are said to be squarrose when their tips are pointed and very spreading or recurved.

Sta'chys (An ear of corn)—Synonym for "Spica."

Sta'men—The male organ of a flower. Stamens form one or two whorls within the petals. If two, those of the outer whorl (the outer stamens) alternate with the petals, and are consequently opposite to or over the centre of the sepals; those of the inner whorl (the inner stamens) alternate with the outer ones, and are therefore opposite to the petals. If there is only one whorl of stamens, they most frequently alternate with the petals; but sometimes they are opposite the petals and alternate with the sepals.

Stamina'lis—Belonging to or bearing relation to stamens.

Stamina'ris—When a double flower is produced by the transformation of stamens in petals. Synonym for "Staminalis."

Stamino'dium—An abortive stamen; or at least an organ bearing a resemblance to an abortive stamen.

Stand'ard—This term is applied to the vexillum of a papilionaceous flower.

Starch or **Fecula** is one of the most universal and conspicuous of cell-contents, and often so abundant in farinaceous roots and seeds as to fill the cell-cavity. It consists of minute grains, called *starch granules*, which vary in size, and are marked with more or less conspicuous concentric lines of growth. The chemical constitution of starch is the same as that of cellulose; it is unaffected by cold water, but forms a jelly with boiling water, and turns blue when tested by iodine. When fully dissolved it is no longer starch, but dextrine.

Statosper'mus—When a seed is straight or erect within the pericarp.

Staurophyl'lus—Synonym for "Cruciatus," Cross-leaf. (See *Oxylobium staurophyllum;* also, *Colletia cruciatia,* the Anchor plant.)

Stel'late, Stel'latus—When several similar parts are disposed in a radiating manner round a centre. **Stellatopilosus**—When the pubescence is stellate. **Stellif'erus, Stellifor'mis, Stelli'gerus, Stellula'tus**—Synonyms for "Stellatus." (See the down upon *Hibiscus heterophyllus*, the Native Rosella.)

Stel'lula (Diminutive from *stella*, a star)—Synonym for "Rosella." The foliaceous whorls which invest the supposed anthers in mosses.

Stem—The stem, or ascending axis, which grows upwards from the root, branches, and bears first one or more leaves in succession, then one or more flowers, and finally one or more fruits. It contains the tissues or other channels by which the nutriment absorbed by the roots is conveyed in the form of sap to the leaves or other points of the surface of the plant, to be elaborated or digested and afterwards redistributed over different parts of the plant for its support and growth. Stems are—Erect, when they ascend perpendicularly from the root or stock; twiggy or virgate, when at the same time they are slender, stiff, and scarcely branched; sarmentose, when the branches of a woody stem are long and weak, although scarcely climbing; decumbent or ascending, when they spread horizontally, or nearly so, at the base, and then turn upwards and become erect; procumbent, when they spread along the ground the whole or the greater portion of their length; diffuse, when at the same time very much and rather loosely branched; prostrate, when they lie still closer to the ground; creeping, when they emit roots at their nodes; this term is also frequently applied to any rhizome or roots which spread horizontally; tufted or cæspitose, when very short, close, and many together from the same stock.

Sten'os—Narrow, as in the compounds, **Stenocar'pus**, narrow fruit; **Stenophyl'lus**, narrow leaf. (See the Dalby Myall, *Acacia stenophylla.*)

Sterig'mata—Threads bearing colourless bodies; "Spermatia"=Basidium; also, the elevated lines or plates upon stems produced by the bases of decurrent leaves.

Ster'ile, Ste'rilis—Barren, where the fruit, or pollen, is not perfected. Applies also to the fronds of ferns which are not bearing sori.

Sternutatory—Qualities which provoke sneezing; a property very highly possessed by the little Composite, *Centipeda orbicularis.*

Stichid'ium (A little bladder)—A case-like receptacle for the spores of some Algæ.

Stich'os—A row, line, as **Dis'tichum**, **Dis'tichchus**.

Stichocar'pus—Where the fruit is disposed along a spiral line.

Stictopet'alus—Where the petals are covered with glandular points.

Stig'ma—Exposed cellular tissue, free from epidermis, at one part (generally at the summit of the style or ovarium) of a carpel, where the fertilizing influence of the pollen is conveyed to the ovules. Sometimes the stigma is a point, when it is said to be *punctiform;* if in the form of a small heart, it is called a *capitate* stigma. Nothing is, properly speaking, stigma, except the secreting surface of the style; it very often, however, happens that the term is carelessly applied to other portions of the style. In the *Iris* and its allies, the three petaloid lobed styles are called stigmata; while the stigma is in reality confined to a narrow humid space at the back of each style. In Labiatæ, what is called a two-lobed stigma has a two-lobed style, the points only of the lobes of which are stigmatic; and in Sweet Pea the hairy back of the style has been spoken of as the stigma, while in fact the latter is confined to the mere point of the style.

Stigmato'phorus—The portion of the style which bears the stigma.

Stigmatoste'mon, Stigmatoste'monis—Where the stamens cohere to the stigma.

Stim'ulans—Pricking or stinging. **Stimulo'sus**—Where a surface is covered with stings. **Stim'ulus**—A sting. A sting is a sharp, somewhat stiff hair, seated on a gland which secretes an acid fluid. When the skin of the human body is penetrated by the hair, and the fluid injected, this produces acute pain.

Stipel'læ—Secondary stipules, which are sometimes found on compound leaves at the points where the leaflets are inserted. (See leaves of the common French Bean for stipules and stipellæ. *Erythrinas* will also serve for examples; here the stipules are often small, and the stipellæ gland-like.)

Sti'pes—This term is usually applied to the stalks of fern-fronds and the stalk which supports the cap of certain Fungi. (See stalk in common Mushroom, or the fruit of any of the so-called Native Pomegranates.)

Sti'pitate—Elevated on a stalk which is neither a petiole nor a peduncle; as for example, some kinds of carpels, also scales, bracts, or stipules, or almost any part of the plant besides leaves and flowers are stalked, they are said to be stipitate, from *Stipes,* a stalk.

Stip'ticus (*Stypticus,* astringent)—Possessing an astringent taste.

Sti'pules—Leaf-like or scale-like appendages at the base of the leaf-stalk, or on the node of the stem. When present there are generally two, one on each side of the leaf, and they sometimes appear to protect the young leaf before it is developed. They are, however, exceedingly variable in size and appearance, sometimes exactly like the true leaves except that they have no buds in their axils, or looking like the leaflets of a compound leaf, sometimes apparently the only leaves of the plant; generally small and narrow, sometimes reduced to minute scales, spots, or scars, sometimes united into one opposite the leaf, or more or less united with, or *adnate* to the petiole, or quite detached from the leaf, and forming a ring or sheath round the stem in the axis of the leaf. (See Leichhardt tree, *Sarcocephalus cordatus.*)

Stipulif'erus—Bearing stipules. **Stipulosus**—Having very large stipules.

Stock—The stock of a herbaceous perennial, in its most complete state, includes a small portion of the summit of the previous year's roots, as well as the base of the previous year's stem. Such stocks will increase yearly, so as at length to form dense tufts. They will often preserve through the winter a few leaves, amongst which are placed the buds which grow out into stems the following year, whilst the under side of the stock emits new roots from amongst the remains of the old ones. These perennial stocks only differ from the permanent base of an undershrub in the shortness of the perennial part of the stems and in their texture usually less woody.

Stole, Sto'lo (A shoot)—A lax trailing branch given off at the summit of the root, and taking root at intervals, whence fresh buds are developed. **Stoloniferus**—Producing many stoles.

Sto'mate, Sto'ma (The mouth)—The epidermis is frequently pierced by minute spaces between the cells, called *stomates.* They are oval or mouth-shaped, bordered by *lips* formed of two or more elastic cells so disposed as to cause the stomate to open in a moist and close up in a dry state of the atmosphere. They communicate with intercellular cavities, and are obviously designed to regulate evaporation and respiration. They are chiefly found upon leaves, especially on the under surface. Some idea may be formed of the vast number of stomata on a single leaf by quoting from Baron Mueller's account of the number per square inch of a few of our Eucalypti (on the under side only). Thus he says that in *E. microcorys* (Tee, or now called Tallow-wood) they number 210,000 to 211,000; *E. corymbosa* (Bloodwood)

100,000 to 157,000 stomata on both sides, but less above than below; *E. Baileyana* (Rough Stringy bark), 68,000 to 104,000; *E. tessellaris* (Moreton Bay Ash), 116,000 to 145,000, and 153,000 to 166,000.

Stomatif'erus—Furnished with stomates.

Stool—The gardeners name for a plant from which "layers" are propagated, by bending its branches so that after twisting, or making a cut below one of the buds, they may be inserted into the soil to take root and form additional plants.

Strami'neus—Straw-coloured; yellow with a slight admixture of grey.

Stra'tum—A layer or lamina composed of any kind of tissue. **Stra'tose** — Arranged in layers, or strata.

Straw'berries — For these plants the ground should be well and deeply dug or trenched, adding manure liberally. Plant in rows 2 ft. apart, and 1½ ft. from plant to plant.

Strep'tocar'pus — Where the fruit is marked by spirally arranged stripes. So of other combinations with "Strepta."

Stri'a — A groove, furrow, or streak. **Stria'ted**, **Stria'tus** (Channelled)—Marked with striæ.

Stric'tus—Perfectly "straight."

Stri'ga—A small straight hair or scale. **Stri'gilis**, **Strigose'**, **Strigo'sus**—Covered with strigæ; synonym for "Hispid."

Strobila'ceus, **Strobilif'erus** — When flowers, furnished with large bracts, are so arranged as to give the inflorescence the appearance of a strobilus or cone. **Strobilinus**—Either growing on a cone, or having the general aspect of a cone.

Stro'bilus—A cone. An amentum, the carpella of which are scale-like, spread open, and bear naked seeds; sometimes the scales are thin, with little cohesion; but they often are woody, and cohere into a single tuberculated mass. The galbulus differs from the strobilus only in being round, and having the heads of the carpella much enlarged. The fruit of the Juniper is a galbulus, with fleshy coalescent carpella. The fruit of *Pinus* illustrates the strobilus.

Stro'ma—Either, generally, the part of acotyledonous plants which bears or encloses the fructification; or more restrictedly, limited to the fleshy thallus of certain Fungi, in which the perithecia are immersed.

Strom'bus-shaped, **Strombulif'erus**, **Strombulifor'mis** — Spirally twisted like a cork-screw or some shells, as some pods of *Medicago*.

Stro'phes—A spiral. Any of the various spirals exhibited by the disposition of leaves round an axis.

Strophio'le, **Strophi'ola**, **Strophi'olus**—Synonym for "Caruncula," a fleshy appendage proceeding from the testa by the side of or near the funicle. (See the seeds of *Hardenbergia monophylla*, the Bushman's Sarsaparilla.)

Stru'ma (A wen)—An apophysis which is restricted to one side of the base of a moss theca. A swelling at the point where the petiole is connected with the limb in certain leaves. **Strumi'ferus**, **Strumo'sus**—Furnished with a struma. **Strumifor'mis**—Having the general appearance of a struma. **Strumulo'sus**—Furnished with a small struma.

Stu'pa (Tow)—A tuft or mass of hair or fine filament matted together. **Stu'peus**, **Stu'pose**, **Stupo'sus**—Composed of matted filaments.

Sty'gius (Infernal)—Said of plants which grow in foul water; in allusion to the Styx.

Style, **Sty'lus**—A support frequently interposed between the stigma and ovary, and originating in the lengthening out of a part of the latter. **Styliformis** — Resembling a style. **Stylinus** — Belonging to a style. **Styliscus**—A chord of peculiar tissue, which descends from the stigma within the style down to the ovary. **Stylodeus** — Furnished with a style. **Stylopodium**—A fleshy disk at the base of each of the styles of the Umbelliferæ. **Stylostegium**—A peculiar form of cuculus surrounding the style.

Sty'lus—The style; also the ostiolum of certain Fungi.

Styp'tic—Having the power to staunch blood. This property is ascribed to the roots of the European Water Lily.

Sua've, **Suaveolens**—Having a sweet fragrance, as the flowers of *Cymbidium suave*, or the Native Tobacco, *Nicotiana suaveolens*.

Sub (About or near to) — Somewhat. When compounded with any botanical term, implies a near approach to the condition which that term more precisely designates. Thus: — **Sub-acaules**—When the stem is scarcely apparent. **Sub-apicula'ris** — When the summit of a stem is a little prolonged, without branch or leaf, beyond the spike. **Sub-diffor'mis**—Possessing a slight degree of irregularity.

Subero'sus—Of the nature of cork; or having some general appearance of cork. Example, the Cork tree, *Quercus suber*.

Subic'ulum—The underlayer.

Subla'tus—When the ovary either has or seems to have a support.

Submer'ged, **Submersi'bilis**, **Submer'sus**—Growing entirely beneath the surface of water.

Sub-ni'ger—Synonym for "Nigricans."

Sub-serra'tus — Synonym for "Serrulatus."

Sub-species—Applied to some particular form, which may be considered as a more or less permanent variety of some species, rather than as characterising a distinct species.

Sub'ulate, **Subula'tus**, **Subulifor'mis**—Somewhat the shape of a shoemaker's awl; awl-shaped. **Subuliferus**—Furnished with long awl-shaped spines.

Succinc'tus (Trussed up)—Synonym for "Circinatus."

Succi'neus—Of an amber colour; yellow with a little grey.

Succi'sus—Appearing as if a part were cut off at the extremity.

Succo'sus—See "Succulent."

Succubous—Leaves are said to be succubous when the anterior margin of each leaf, as set on the branches, passes beneath the posterior margin of that which succeeds it.

Succubus (*Succumbo*, to couch down)—The stipular appendages of certain Hepaticæ. (See also "Succubous.")

Suc'culent, Succulen'tus — When the cellular tissue is abundant and replete with juices.

Suck'er—A branch (surculus) originating on a subterranean portion of a stem, and rising above ground. Also a tubercular process (haustorium) on the stems of certain flowering parasites, by which they imbibe nourishment from the plants to which they attach themselves.

Sudori'fic—Having the power of producing perspiration. The leaves of the common Sage are said to have this property.

Suffrutes'cent, Suffrutes'cens, Suffrutico'sus—Possessing the character of an undershrub. **Suffrutex**—An undershrub.

Sufful'tus—When some part is so seated beneath another as to appear as if it somewhat supported or propped it up.

Sugar is one of the principal organised contents of cells. It is of two kinds, the one called *cane sugar*, and the other *grape sugar*. It usually exists dissolved in the sap. It is found abundantly in growing parts, in fruits, and in germinating seeds.

Sul'cate, Sulca'tus—Marked by depressed parallel lines; furrowed. **Sul'cus**—A furrow.

Sul'phate of Ammo'nia—A writer in *Gard. Chron.* says that this is a valuable stimulant for heightening the colour, rendering the petals firm, and the foliage a dark-green, of *Chrysanthemum*. For use, dissolve for the purpose one tablespoonful of sulphate of ammonia in four gallons of some weak liquid manure, and apply to the plants, say, once a week.

Sulphu'reus, Sulphu'reous—A pale tint of pure yellow.

Sultanas, Drying of—See "Currants."

Super-axil'lary, Super-axilla'ris—See "Supra-axillary." (See the flowers of *Solanum nigrum*, which are frequently so.)

Super-compos'itus—More than simply compound.

Superficia'rius—Upon the surface of an organ.

Supe'rior—Growing above anything. A calyx is *half-superior* when it appears to grow from above the base of the ovary; and absolutely superior when it appears to grow from the top of the ovary. On the contrary, the ovary is superior when it grows above the origin of the calyx.

Supi'nus (Lying on the back, face upwards)—Synonym for "Procumbens."

Suppurate—To generate matter.

Supra-axil'lary, Supra-axilla'ris—Somewhat higher than the axil. This is frequently the case with the inflorescence of *Phyllanthus Ferdinandi*.

Supra-decom'pound, Supra-decompo'situs—Where the extent to which a leaf is "Decompounded" cannot be definitely remarked.

Supra-folia'ceus—Placed higher upon a branch than a particular leaf.

Supra-fo'lius—Growing upon a leaf.

Surculi'gerus—Producing a sucker, or assuming the appearance of a sucker. **Surculus**—A sucker; a young prostrate stem in some Mosses.

Sur'sum (Upwards)—Directed upwards and forwards.

Suspen'ded, Suspen'sus (Hung up)—Attached somewhere between base and apex; and sometimes restricted to cases where the apex is directed downwards.

Suspen'sor—A very delicate cellular chord by which some embryos appear to be attached to the apex of the nucleus.

Su'ture, Sutu'ra (A seam)—The plane of junction between contiguous parts, frequently indicated superficially by a line, either elevated or depressed. **Suturarius** — Possessing a suture. **Sutural, Suturalis**—Bearing some relation to the suture.

Sychnocar'pus—Where a plant produces fruit many times without perishing, as in the case of trees, shrubs, and perennials.

Syco'nium, Sy'conus (A fig) — An aggregate fruit where many flowers have been developed upon a fleshy receptacle, which is either a flattened disk, as in *Dorstenia*, or forms a nearly-closed cavity, as in the Fig.

Sygolli'phytum — A plant where the perianth becomes combined with the pericarp.

Sylvat'icus, Sylves'tris—A plant whose natural habitat is a wood or copse. (See *Asplenium sylvaticum*.)

Symbio'sis—Living together, of dissimilar organisms.

Symme'tria, Sym'metry—When parts are so disposed round a centre that a line or plane through that centre can separate them into two divisions, in each of which the parts are similarly disposed, as **Symmetran'thus**, referring to the flower, and **Symmetrocar'pus**, to the fruit.

Sympeta'licus—When stamens are combined into an androphorum, and, by adhesion to the petals, give to a strictly polypetalous flower the appearance of being monopetalous.

Symphyanthe'rus—Synonym for "Synanthe'rus," "Syngenesius." **Symphyoste'mon**—Synonym for "Monadelphus."

Symphy'sia, Sym'physis—A growing together, or uniting of parts usually distinct.

Symphyto'gynus, Symphytothe'lus—Indicating adhesion between the calyx and pistil; where the ovary is more or less inferior.

Symplo'cium, Symplo'kium — Synonym for the Annulus to the Thecæ of Ferns.

Synanthro'phytum—A plant whose fruit is composed of many carpels aggregated together.

Synarmo'phytus—Synonym for "Gynandrous."

Syncar'pium, Syncar'pum—A fruit composed of several carpels, which become more or less fleshy and cohere together. Applied also where the carpels are combined by their floral envelopes becoming fleshy. The Sweetsop Custard Apple (*Anona*) is a ready example. Syncar'pus—Bearing fruit composed of cohering carpels. The clusters of drupes as they separate from a head of fruit of the so-called Native Bread-fruit, *Pandanus*, are syncarps.

Syncotyledo'neus—When the cotyledons of dicotyledonous plants so cohere together as to form a single undivided mass.

Syne'drus—Growing on the angle of a stem.

Syngene'sious, Syngenesus — Where the stamens cohere by their anthers, as in Compositæ.

Synocho'rion — Synonym for "Carcerulus."

Synorhi'zus — When the point of the radicle, in the embryo, adheres to the perisperm.

Synstigma'ticus—When a pollen-mass, in the Orchideæ, is furnished with a retinaculum, by which it adheres to the stigma.

Synzy'gia—The point of junction, above the radicle, where opposite cotyledons meet in dicotyledonous plants.

Syph'ilit'ic—Useful in the cure of syphilis. In Brazil the roots of *Brunfelsia* (*Francisea*) *uniflora* have been used as a remedy, and there the plant is called Vegetable Mercury.

Systello'phytum—When a persistent calyx appears to form part of the fruit.

Sys'tem, Syste'ma — An arrangement of natural objects according to prescribed rules. Systema'tic, Systema'ticus—Belonging to a system. Thus plants are systematically arranged in Classes, *Subclasses* or *Alliances*; Natural Orders or Families, *Suborders*; Tribes, *Subtribes*, *Divisions*, *Subdivisions*; Genera, *Subgenera*, Sections, *Subsections*; Species, Varieties. If the variety generally comes true from seed, it is often called a Race.

Sys'tylus—Where several styles cohere so as to form a single column.

Tabaci'nus—Tobacco-coloured; grey with some binary compound of red with a little yellow. Or the plant, or part thereof, may be used instead of tobacco for some purposes. *Glycine tabacina.*

Ta'bes (A rotting away)—A disease which produces a gradual decay. Ta'bescens (Wasting away)—Synonym for "Marcescens."

Ta'bula—Synonym for "Pileus" in some Fungi.

Tabula'ted—Consisting of superimposed layers.

Tænia'nus (*Tænia*, a ribband, and hence a tapeworm)—Tapeworm-shaped.

Tala'ra (*Talarium*, the winged shoe of Mercury)—Synonym for an Ala in the papilionaceous corolla.

Ta'lea—A slip or cutting made for the purpose of propagating the plant.

Tangen'tial—In the direction of a tangent. Touching a straight line on the arc of a circle.

Tap-root—An unbranched tapering mass round the descending axis, from which fibres are given off in more or less abundance.

Tarta'reous, Tarta'reus (*Tartarum*, the tartar-crust in wine vessels)—Where the surface is rough and crumbling, as in many Lichens. (See *Lecanora tartarea.*)

Taw'ny—Of a dull yellowish tint, obtained by mixing orange-yellow with grey. (See flowers of the Tawny Day Lily, *Hemerocallis fulva.*)

Taxo'logy, Taxo'nomy, Taxolo'gia, Taxono'mia—That department of Botany which embraces the classification of plants.

Teg'men (A covering)—See "Secundine." Synonym for "Gluma" in grasses. Tegmen'tum—The outer scales of a leaf-bud. Tegmina'tus—When the nucleus is invested by a tegmen or covering.

Te'la (A web of cloth)—Elementary tissue.

Tel'entospore — In Uredineæ, spore formed by abjunction on, but not separating from, a sterigma, producing in germination, which takes place after a resting period, a promycelium.

Tem'ulentus—Drunken. Applied to the grass *Lolium temulentum*, the "Drunken Darnel."

Ten'dril—A modified condition of some appendage to the axis of vegetation, when it assumes the form of a cord, twisting round contiguous objects for support, as in the Vine and the Vetches.

Ten'uis — Slender. Tenuifo'lius — A slender, linear leaf.

Tephro'sius—Of an ash-grey colour; grey much diluted.

Teratol'ogy—Synonym for "Morphology." To a certain extent it rather treats of the malformations or deviations from the normal type of structure of plants. An excellent account of this subject is given by Dr. Maxwell T. Masters in a volume published by the Ray Society. He divides the subject under the following headings, viz.:—1. Deviation from the ordinary arrangement, comprising (a) *union of parts* (cohesion and adhesion); (b) *independence of organs* (fission, dialysis, solution); (c) *alteration of position* (displacement, prolification, heterotaxy, heterogamy, alteration in the direction of organs). 2. Deviations from ordinary forms, comprising (*a*) strasimorphy (persistence of juvenile forms); (*b*) pleiomorphy (irregular peloria); (*c*) metamorphy (phyllody, metamorphy of the floral organs); (*d*) heteromorphy (deformities, polymorphy, alteration of colour). 3. Deviation from ordinary number—(*a*) increase of number of organs (multiplication of axile organs, inflorescence, multiplication of foliar organs); (*b*) diminished number of organs (suppression of axile organs, suppression of foliar organs). 4. Deviation from ordinary size and consistence—(*a*) hypertrophy (enlargement, elongation, enation); (*b*) atrophy (abortion, degeneration).

TERCI'NE, TERCI'NA—A membrane between the secundine and nucleus, but not generally allowed to be any more than some layer of the regular envelopes to the latter.

TE'RETE—An organ, or any part of a plant, is so called when the transverse section is not angular, nearly cylindrical, but somewhat tapering into a very elongated cone. (See leaves of *Dendrobium teretifolium*, and the flower buds of *Eucalyptus tereticornis*, Blue Gum.)

TERGISPER'MUS—Synonym for "Dorsiferus," which is the better term.

TER'GUM—The back.

TER'MINAL, TERMINA'LIS—Situate at the extremity of some part.

TERMINOL'OGY—Synonym for "Glossology."

TERN—In threes, or in a whorl of three.

TERNA'TE, TERNA'TUS—Arranged by threes, about the same part. **TERNA'TO-PINNA'TUS**—When three secondary petioles, attached to a common petiole, bear leaflets arranged in a pinnate manner. (See leaves of Queensland Nut, whose leaves are in a whorl of 3 or 4, *Macadamia ternifolia.*)

TERRA'NEUS, TERRES'TRIS—Growing above the surface, on dry land. **TERRICOLE**—Growing on the earth.

TESSELLA'TED, TESSELLA'TUS—When colours are so blended in nearly square or oblong patches as to represent an appearance of chequer-work. (See the bark at the base of the trunk of the Moreton Bay Ash, *Eucalyptus tessellaris.*)

TESSULA'RIS (*Tessera*, a die)—Approaching the form of a cube.

TES'TA (A pot)—The outer coat of the spermoderm.

TESTA'CEOUS, TESTA'CEUS—Brownish-yellow; orange-yellow with much grey; brick-dust colour.

TESTIC'ULA, TESTIC'ULATE, TESTICULA'TUS—Solid and ovate. **TESTIC'ULUS, TES'TIS**—Synonym for "Anthera." (See the oval tubers of many terrestrial Orchids.)

TE'TER (Stinking)—Giving out a fœtid odour.

TET'RA—Four in composition. Thus:—**TETRACHOCAR'PIUM**—A cluster of four spores in certain Algæ. **TETRACHO'TOMUS**—When a cyme (in its restricted sense of fascicle) bears four lateral peduncles about the terminal flower. **TETRACOC'CUS**—A fruit composed of four cocca. **TETRADYMUS**—Where every alternate lamella of an Agaric is shorter than the two contiguous to it, and one complete lamella terminates a set of four pairs of short and long; also, where four cells or cases are combined. **TETRA'DYNAMIA, TETRADY'NAMOUS**—A name given to flowers where the stamens are six, two of which are shorter than the other four. **TETRA'GONOUS, TETRAGO'NUS**—Having four angles, not very acute. **TETRA'GYNOUS, TETRA'GYNUS**—Where the four carpels, or at least styles, are free. **TETRAN'DROUS**—Having four stamens. **TET'RAHE'DRICAL**—Having four sides. **TET'RASPORES**—Certain spores produced in fours.

THAL'AMIFLO'RÆ (1st series of Polype'talæ)—Torus small or elongated, rarely expanded in a disk. Ovary superior. Stamens definite or more frequently indefinite.

THALAMIUM—Synonym for "Hymenium."

THALLINE—Composed of, or of the same substance as the thallus.

THA'LLUS—A frond or expansion somewhat resembling a leaf.

THE'CA=**AS'CUS.**

THELE'PHORUS—Covered with nipple-like prominences

THINNING FRUIT—If we were not aware of the fact, a glance at the bulk of fruit brought into the towns for sale would at once show that little or no attention was paid in Queensland to this most important operation. The exhaustion consequent upon the production of seed is a chief cause of the decay of plants. This explains why fruit trees are weakened or rendered temporarily unproductive, and even killed, by being allowed to ripen too large a crop of fruit, or to "over bear" themselves, as it is termed. Will amateurs who we often hear boasting that their trees are breaking down with fruit bear this in mind? An English writer on the subject says truly—"The thinning of fruit is one of the most important operations of the garden, though one of the least generally practised. It should be done, however, with a bold and fearless hand; and the perfection of that which is allowed to remain will amply reward the grower, in harvest time, for the apparent sacrifice made. But he will not reap his reward only in this year, for the trees, thus kept unweakened by over-production, will be able to mature their wood, and deposit their store of sap in their vessels, so absolutely necessary for their fruitfulness next season.

THRIX, TRICHOS—Hair. As in the words trichocephalus, acrotriche, &c.

THYRSE, THYR'SUS—A branched raceme, in which the middle branches are longer than those above or below them. **THYR'SULA**—Diminutive of "Thyrsus." **THYRSIF'ERUS, THYRSIFLO'RUS**—Where the inflorescence is a Thyrsus. (See *Dichorisandra thyrsiflora*, not an uncommon garden plant, with deep-blue flowers.)

TIGEL'LA (A Latinized word from the French *Tigelle*, diminutive of *Tige*, a stem)—The portion of the embryo between the radicle and cotyledons. TEGELLA'TUS—When the tigella is well marked.

TIGELLU'LA—A description of filament in the truffle.

TINCTO'RIUS — Capable of serving as a dye, as the Indigo Plant, *Indigofera tinctoria.*

TOISE—A measure from about five to six feet.

TOME—A cut or section, as in the words "Isotoma," "Peritoma," &c.

TOMEN'TOSE, TOMENTO'SUS—Covered with tomentum or a closely matted, very slightly rigid, and rather short pubescence, somewhat resembling wool. (See *Sophora tomentosa*, a tall shrub of our tropical coast, and frequently planted in gardens.)

TOR'TUOUS, TORTUO'SUS—Bent irregularly in different directions.

TORULO'SUS—When a cylindrical body is swollen at intervals, somewhat resembling a cord with knots.

TO'RUS (A bed)—The axis on which all parts of the floral whorls within the calyx are seated. Synonymous with "Receptacle." (See the Pink Water Lily; the nuts will be found loose in the cavities of its enlarged spongy torus.)

TRACHÆ'A, TRACHE'A (The windpipe)—A minute cylindrical vessel (tapering at the extremities to points) of the elementary tissue, composed of membrane, with one or more spirally-twisted fibres lining the interior. TRACHENCHYMA—Fibro-vascular tissue, composed of trachæa, or ducts, with markings spirally arranged.

TRACHYCAR'PUS, TRACHYSPER'MUS — Used synonymously in some cases where the pericarp is rough with points.

TRAJEC'TILIS—When the connective completely separates the anther cells.

TRA'MA (Yarn)—The tissue of certain Fungi.

TRANS'VERSE, TRANSVER'SUS, TRANSVERSA'LIS—In a plane perpendicular to the axis, or longitudinal direction. (See the fruit of the Native Yam, *Dioscorea transversa.*)

TRAPEZO'ID, TRAPE'ZIFORM, TRAPEZOI'DEUS, TRAPEZIFOR'MIS—When the sides of some four-sided lamina (as the leaf) are unequal. (See leaflets of *Adiantum trapeziforme.*)

TREE—An arboreous or arborescent plant with a trunk, or single stem, rising above the ground.

TRENCH'ING—In a garden this is always necessary, so a simple mode of performing the work may be given. Open a trench about two feet wide, one full spit, and the shovelling deep, and remove the soil from it to where it is intended to finish the piece; then put in the dung, and dig it in with the bottom spit in the trench; if the ground is very hard, break up with a pick before putting in the dung; then fill up this trench with the top spit of the second, treating it in like manner, and so on. The advantages of this plan of working the soil are—The good soil is retained at the top, an important consideration where the subsoil is poor or bad; the bottom soil is enriched and loosened for the penetration and nourishment of the roots, and, allowing them to descend deeper, they are not so liable to suffer from drought in dry weather; strong soil is rendered capable of absorbing more moisture, and yet remains dry at the surface, by the water passing down more rapidly to the subsoil, and it ensures a thorough shifting of the soil.

TRI, in compounds, signifies three, as TRIADEL'PHOUS, TRIADEL'PHUS, when the stamens are collected into three distinct bundles; TRIAN'DROUS, TRIAN'DER, TRIANDRUS, having three stamens; TRIAN'GULAR, TRIANGULA'RIS, TRIANGULA'TUS, either a plain surface approaching a triangle in shape, or a solid part whose transverse section approaches a triangle with acute angles; TRIANTHUS, when a peduncle bears three flowers.

TRIBE, TRI'BUS—A group of genera subordinate to an order.

TRI'CA—A form of apothecium, where the surface is orbicular, and presents spirally disposed and elevated lines.

TRICEPH'ALUS—Three-headed. TRICO'LOR—Of three colours. (See *Kyllinga triceps* and *Tritonia tricolor.*)

TRICHI'DIUM—Hair-like filaments bearing the spores of certain Fungi. TRICHOCAR'PUS—Where the fruit is covered with hair-like pubescence. TRICHOCEPH'ALUS—Where flowers are collected in heads, which are surrounded with hair-like appendages. TRICHO'DES—Resembling hair. TRICHOLO'MA—Where the border is furnished with hairs. TRICHO'MA—Hair-like filaments composing the thallus of certain Algæ. TRICHOGO'NIA—The female reproductive organs in Batrachosperms.

TRICHOT'OMUS—When subdivisions of any part take place by threes.

TRICOC'CUS—A fruit composed of three cocci. (See fruit of Castor Oil Plant.)

TRIENNA'LIS, TRIEN'NIS—Lasting for three years. TRIFARIUS—Ranged in three rows. TRIFID, TRIFIDUS—Where the incisions extend about half way towards the base in a divided lamina. TRIFOLIATE, TRIFOLIATUS, TRIFOLIUS — Applied where leaflets are disposed in threes at the extremities of their petioles, whether in compound or decompound leaves.

TRIFOLIOLA'TUS — Synonym for "Ternatus."

TRIPAR'TITE, TRIPARTITUS — Divided into three portions.

TRIPLINERVATUS—When a prominent nerve branches off on either side of the midrib of a leaf near the base, the other nerves being comparatively small.

TRIQUE'TRUS—With three faces, and edges. (See the leaves of *Xanthorrhœa arborea*, common Grass-tree.)

Triquina'tus—When the lower divisions of a bipinnate leaf are trifid.

Tris'tis (Sad)—Of a dingy or dull colour.

Trisulca'tus—Marked by three depressed lines or furrows. (See the Duck-weed, *Lemna trisulca.*)

Triter'nate, Triterna'tus — Where the petiole becoming twice compound in a ternate manner, each partial petiole bears three leaflets.

Triv'ial, Trivia'lis — The common or specific name given in addition to the generic name of a plant.

Trochlea'ris—Pulley-shaped.

Trun'cate, Trunca'tus — Terminating abruptly, as though it had been shortened by the removal of the extremity. Truncatularis, Trunculatus — Slightly truncate. Example, *Epiphyllum truncatum.*

Trun'cheons—These are offsets from the base of tree-stumps, and are obtained in the following manner:—In the propagation of the Olive and similar trees, an old tree is cut off near the base of the stem, which latter being left in the ground will usually send up shoots from the collum below the surface of the soil; these are allowed to grow until their stems have attained a diameter of one or two inches, when they are each cut off at about two feet from the ground, and with an axe each is severed with a portion of the butt from the old stump. Each of these offsets is termed a truncheon, and can at once be planted where a tree is required.

Trun'cus, Trunk—The main stem, without the branches.

Truss is the florist term for what the botanist calls an umbel of flowers. At Queensland Horticultural Exhibitions the terms "truss" and "spike" are used to include all kinds of inflorescence, which, to say the least of it, is very confusing.

Try'ma—A form of fruit. Drupaceous, superior, by abortion one-celled, one-seeded, with a two-valved indehiscent endocarp, and a coriaceous or fleshy valveless sarcocarp. Example, the Walnut (*Juglans*).

Tubæfor'mis, Tuba'tus—Trumpet-shaped.

Tube, Tu'bus—The tubular portion formed by the cohesion of the subordinate parts composing a floral whorl, as the part of a gamo-sepalous or petalous, calyx or corolla, formed by the union of the edges of the sepals or petals. The staminal tube is formed from the cohesion of the filaments in monadelphous flowers.

Tu'ber—This term is applied to a short, thick, more or less succulent rootstock or rhizome, as well as to a root of that shape, although some botanists propose to restrict its meaning to the one or the other. An *Orchis* tuber, called by some a *Knob*, is an annual tuberous rootstock with one bud at the top. The potato is an annual tuberous rootstock with several buds. (Examine the roots of the Fringe Violet, *Thysanotus tuberosus*, also.)

Tu'bercle, Tuber'culum—A small wart-like excrescence. Tu'bercled, Tubercula'tus — Covered with tubercles. Tuber'cular, Tuberculo'sus—Having swollen appendages, or excrescences.

Tubiflo'rus—Where the tube of a monopetalous corolla is very long. Tubifor'mis—Resembling a tube. Tubil'lus—Elongated cells of cellular tissue. Tu'bular—Hollow and cylindrical. (See the flowers of *Iochroma tubulosa.*)

Tuitans'—When leaves, during sleep, incline downwards, and appear, as it were, to protect the stem.

Tu'midus—Swollen. Synonym for "Inflatus."

Tu'nica—A loose membranous skin investing some organ; synonym for "Spermoderm." The peridium of some Fungi. Turnicatus (Coated)—When invested with a tunica.

Tur'binate, Turbina'tus—Top-shaped.

Turf—Turves should be cut as thin as possible, for if the ground is properly prepared to receive them the herbage will form fresh rootlets in the fresh soils; besides, a thin sod is more elastic, and thus is more evenly beaten down.

Turfa'ceus, Turfo'sus—Used as "Torfaceus," growing in bogs.

Tur'gidus — Swollen; thick, and as if swollen, but not inflated with air.

Tu'rio (A tendril)—The early stage of a sucker when invested by leaf-scales. Turioniferus—Throwing up turiones, as the Asparagus plant.

Tym'panum — A drum. A membrane closing the mouth of the thecæ in some Mosses.

Uligino'sus, Uligina'rius—Growing in marshy places, as *Selaginella uliginosa*, a little Lycopodinous plant, plentiful around the swamps of Stradbroke Island.

Ul'na (A man's arm)—Estimated at about twenty-four inches. Ulnaris—Of the length of an ulna.

U'lothrix—In hair-like crisped linear divisions.

Um'bel, Umbel'la—A form of inflorescence in which all the pedicels start from the summit of the peduncle. Umbella'tus—When the inflorescence is in umbels, or approaches to such a disposition of the flowers. Umbellif'erus—Bearing umbels. An umbel is said to be *simple* when each of its branches or *rays* bears a single flower; *compound* when each ray bears a *partial umbel* or umbellula. (See the inflorescence of the Order Umbelliferæ, also of the lovely garden plant *Agapanthus umbellatus*, the African Lily or Love-flower.)

Um'ber—A dark brown; grey with a little red.

Umbil'ical-chord (*Umbilicus*, the navel)—Synonym for "Funicular-chord." Umbil'icate, Umbilica'tus—Having a depression in the centre. Also (*umbilicus*, a boss) with an elevation in the centre; synonym for "Peltate."

UM'BO (A boss)—Synonym for "Umbilicus" when applied to a central elevation. UMBONA'TUS — Furnished with an umbo. UMBONULATUS — When an umbo is very small. (See the fruit of *Capparis umbonatus*, one of the so-called Native Pomegranates.)

UMBRA'CULUM—Having the general form of an umbrella. UMBRACULIFOR'MIS — Umbrella-shaped.

UMBRATI'COLUS — Spontaneously vegetating in shady situations.

UMBRI'NUS—The colour of umber.

UMBRO'SUS—Applied to shade-loving plants, as *Asplenium umbrosum*.

UNANGULA'TUS—When a stem, &c., has a projecting line or angle along one side only.

UNCA'TUS—Hcoked, bent, or recurved at the top like a hook. UNCIFORMIS, UNCINATUS — Synonym for "Uncatus."

UN'CIA (An inch)—About an inch long. UNCIALIS—Of the length expressed by "Uncia."

UNCTUO'SUS—Greasy.

UN'CUS—A hook.

UNDA'TUS, UNDOSUS, UNDULATUS—Wavy, waved. Synonym for "Repandus."

UNDERSHRUB — A plant only partially shrubby, the ends of the newly-formed branches continuing herbaceous, and dying away in winter.

UNGUIC'ULATE, UNGUICULA'RIS, UNGUICULA'TUS—Furnished with a claw. UN'GUIS—A claw; also about the length of the finger-nail, or half-an-inch.

UNICAPSULA'RIS—Composed of a single capsule. UNICELLULA'RIS—Composed of a single cell. UNI'COLOR — Of one uniform tint. UNI'CUS—Where there is only one of a particular part specified. UNIFLO'RUS—Supporting or subtending a single flower. UNIFOLIA'TUS, UNIFO'LIUS—Bearing only a single leaf. UNIFOLIOLATUS — Where a peduncle supports a single leaflet, distinguished as such by being articulate to it. UNIGE'NUS—Putting forth leaves once only in the year.

UNIJUGA'TUS, UNIJU'GUS—A pinnate form with only a single pair of subordinate parts. UNILABIA'TUS — An irregular monopetalous corolla, with only one lip. A monopetalous corolla, slit on one side, as in the "ligulate" florets of Compositæ. UNILAT'ERALIS—Either disposed along one side, or entirely forming one side. UNILO'CULAR, UNILOCULA'RIS—With one cell only. UNIOVULA'TUS—When a cell in the pericarp contains only one ovule. For example see *Brunsfelsia* (*Franciscea*) *uniflora*.

UNSTRATIFIED — Applied to a Lichen thallus in which the normal layers cannot be distinctly seen, but are confused.

URCE'OLATE, URCEOLA'RIS, URCEOLA'TUS—Shaped somewhat like a pitcher with a contracted mouth. URCE'OLUS — A membranous or cartilaginous tube, swollen below, and more or less contracted above.

U'RENS—Stinging, as the English Nettle, *Urtica urens*.

UR'NA, URN—The theca or spore-case of Mosses. The base of a pyxidium.

US'TUS—Scorched. USTULATE—Blackened, as the corn smuts, *Ustilago*.

U'TERUS (The womb)—Synonym for "Volva." U'TERINE—Belonging to the womb. Catechu, a product of *Acacia catechu*, has been used in uterine hæmorrhages.

UTRI'CLE, URTI'CLE, URTRI'CULUS—A small superior, membranous, and monospermous pericarp, dehiscing by a transverse incision. This differs from the pyxidium in texture, being strictly simple—*i.e.*, not proceeding from an ovary with obliterated dissepiments. For example, take the fruit of any species of *Amarantus* or *Chenopodium*. Also, a little bladder filled with air, attached to certain aquatic plants. UTRICULO'SUS—Bearing many of the air bladders termed "utricularis."

UVA'RIUS, UVIF'ERUS, UVIFOR'MIS—Composed of round parts connected by a support, like a bunch of grapes.

VACCARIUS—Cow herb. (See *Saponaria vaccaria*, Cow herb; so called from the belief that it possessed the power of exciting the lacteal secretion in cows.)

VAC'CI'NUS (Belonging to a cow)—Of a dun colour.

VACIL'LANS (Waving) — Synonym for "Versatilis."

VACUOLE—Drops which are seen in the interior of the protoplasm of cells.

VA'CUUS (Void)—When an organ is without some part which is usually present within it, or with it, as a carpel without ovules, a bract without a flower-bud.

VAGIFOR'MIS—Possessing no well-defined form. VAGINERVIS—Where the nerves are irregularly disposed, in various directions, as in the leaves of succulent plants.

VAGI'NA—A sheath. Also any part which completely surrounds another. VAGI'NANS—Assuming the conditions of a vagina. VAGINA'TUS—Surrounded by a vagina. VAGINEL'LA—Where a vagina is very small. VAGIN'ULA—A small sheath at the base of the seta in Mosses.

VA'GUS (Wandering or inconstant)—Proceeding in no definite direction.

VALLE'CULA (Diminutive from *Vallis*, a valley)—A depressed space (interstice) between the primary ridges on the fruit of Umbelliferæ.

VALVE, VAL'VA—Distinct portions of certain organs (as in anthers and pericarps) which become detached by regular dehiscence along definite lines of suture. VALVACEUS—Furnished with valves. VALVATE, VALVARIS, VALVATUS—When contiguous organs, or similar subordinate parts, touch each other along the edges without overlapping. VALVEANUS—When a partition emanates from the expansion of the inner substance of a valve.

Varia'bilis, Va'rians—Presenting a variety in character; as when leaves are variously modified on the same plant. Example, *Dahlia variabilis*.

Var'icose—Swollen here and there.

Va'riegated, Variega'tus, Varius—Where colours are disposed in irregular patches.

Vari'ety, Vari'etas—An individual possessing a form to a certain degree modified from that which is considered to be most characteristic of the species. As for example, take *Vinca rosea*, var. *ocellata;* this is a variety of *Vinca rosea* with a red eye-like centre to the flower.

Vari'folius—Possessing leaves of different forms.

Vari'ola (The pustule of smallpox)—A shield in Lichens.

Va'rius (Changeable)—Where colour gradually changes from one tint to another.

Vas'cular, Vascula'ris, Vasculo'sus—(*Vas*, a vessel). Containing vessels. **Vascular System**—Those interior portions of any plant in which vessels occur. **Vas'culum**—Synonym for "Ascidium."

Vasiduc'tus—Synonym for "Raphe."

Vault'ed—See "Fornicatus."

Veil—A membrane which invests the theca in Mosses, and which, by the growth of the seta and expansion of the theca, is ruptured and carried up upon the lid; also a membrane which invests the pileus and is connected with the stipes of certain Fungi. **Velamina'ris**—When an anther dehisces by the rolling up of one side of a cell from base to apex. **Vela'tus**—Veiled.

Vein—A bundle of fibro-vascular tissue penetrating a leaf or foliaceous appendage. **Vein'less**—Possessing no veins. **Vein'let**—The smallest ramification of a vein. **Ve'na**—A vein. **Vena'tion, Vena'tio**—The arrangement of veins. **Veno'sus**—With many veins. Example, *Verbena venosa*.

Vel'lus—A fleece. **Velu'men**—Velvet; a coating of close soft hair. **Velu'tinus, Velutino'sus**—Velvety; with a surface resembling velvet, being coated with velumen.

Ve'lum—The veil in certain Fungi.

Veneni'ferus—Producing poisonous matter, as *Zanthoxylum veneficum*, a poisonous tree of Tropical Queensland.

Ven'tral, Ventra'lis—Used in contradistinction to "Dorsal." Thus, in a pericarp formed from a single carpel, the "ventral suture" would be the line of union between the placentiferous edges. **Ventricose', Ventrico'sus** (Big-bellied)—Swelling out on one side. **Ventriculo'sus**—Slightly ventricose.

Ven'ulæ-commu'nes—Anastomosing veinlets.

Venulo'so-hinoi'deus—When equal and curved veins proceed parallel to each other from the midrib to the margin.

Venulo'so-nervo'sus—When straight parallel veins are connected by cross veinlets.

Venus'tus—Lovely, charming, beautiful, as the flowers of *Bignonia venusta*.

Vermicula'ris—Worm-shaped. **Vermicula'tus**—Covered with contorted worm-like elevations.

Ver'mifuge—That which expels worms.

Ver'nal, Verna'lis, Ver'nus—Belonging to spring; appearing at spring time.

Verna'tion, Verna'tio—The manner in which leaves are disposed in the bud.

Vernico'sus—When a surface appears polished, as if by varnish.

Ver'pa—An old Roman name, synonymous with "Phallus."

Verru'ca—A wart; also the perithæcium of some Fungi. **Verru'cæformis**—Resembling a wart. **Verruco'sus**—Warty. **Verruculo'sus**—Where the warts are small and abundant.

Ver'satile, Versat'ilis—When a part is so slightly attached to its support that it readily swings to and fro. (See anthers of *Gardenia* flower.)

Versico'lor—Possessing several tints of colour, or appearing differently coloured in different positions. (See *Oxalis versicolor.*)

Versifor'mis—Changing its shape as it grows old.

Versipal'mus—A palmate arrangement, in which the divisions are not all in the same plane.

Ver'tebrate, Vertebra'tus—Distinctly articulated, and often more or less contracted at intervals.

Ver'tex (The top or uttermost point)—Any upper extremity. The pileus of certain Fungi.

Ver'tical—Perpendicular.

Ver'ticel, Verticil'lus—A whorl. **Verticil'laster**—When short cymes in the axils of opposite leaves give to the inflorescence of Labiatæ the appearance of their flowers being disposed in whorls. **Verti'cillate, Verticilla'tus**—Whorled. **Verticilliflo'rus**—When whorls of flowers have a spiked arrangement. **Verticillato-pinnatisectus**—Where certain sessile leaves are subdivided into numerous filiform pinnately arranged segments, which assume an appearance as if they were whorled about the stem. (See the small scales which take the place of leaves at the articulations of the branchlets of our Oaks, *Casuarina*.)

Ver'tilin'ear—Having straight lines.

Verucula'tus—Cylindrical and somewhat pointed.

Ves'icant—To raise blisters. The root of the Horse-radish tree has this property.

Vesic'atorius—Producing blisters when applied to the skin. **Ve'sicle**—A bladder-like cavity filled with air. **Vesi'cular, Vesiculæfor'mis, Vesicula'ris, Vesicula'tus**—Bladdery. **Vesiculif'erus**—Supporting or containing bladders.

Vesperti'nus—Appearing or expanding in the evening; or **Vespertil'io**, the specific name of the Queensland Cork-tree, so named (*Erythrina vespertilio*) from the leaflets resembling a bat on the wing.

VES'SEL—A cell which assumes a lengthened tubular condition.

VEXIL'LARY, VEXILLA'RIS—The arrangement of the petals in the æstivation of a papilionaceous flower. VEXILLA'TUS—When a papilionaceous flower has a large standard. VEXIL'LUM—A standdard.

VI'BRATILE—That moves to and fro, or vibrates.

VICE'NI (Twenty)—In twenties.

VIGI'LIÆ—Applied to the periods during which certain plants gradually expand and close their flowers daily.

VILLOSE', VILLIF'ERUS, VILLO'SUS—Covered with long weak hairs. VILLOS'ITY—A covering of long weak hair.

VI'MEN (A twig)—A long flexible shoot. VIMI'NEOUS, VIMI'NEUS — Furnished with long flexible twigs, as many of the Osiers.

VINEA'LIS — Growing naturally in vineyards.

VINO'SUS—Of the colour of red wine; dirty pale red; red with much grey.

VI'OLET, VIOLA'CEUS—Of a violet colour; blue with a little red. VIOLACES'CENS—With a pale violet tinge.

VI'RENS—Green. VIRES'CENS—Somewhat green. VI'RIDIS — Green. VI'ROR — Greenness.

VIR'GATE, VIRGA'TUS—Twig-like. VIRGUL'TUM—A twig.

VIRGIN'ENS—Having attained the state of flowering.

VIRIDES'CENS—Synonym for "Virescens."

VIRIDI'NA—Synonym for "Chlorophylla."

VI'ROR—Greenness.

VIRO'SUS (Venemous)—With a noisome smell; rank, poisonous.

VIS'CID, VIS'CIDUS, VISCO'SUS—Coated with a tenacious juice, as the fruit of any of the Mistletoe, and young shoots of the viscid Hop-bush.

VITEL'LINUS—The colour of the yolk of an egg; orange with a little grey.

VITEL'LUS (The yolk of an egg)—The thickened sac within the nucleus which contains the amnios; has been also described as any portion attached to the embryo, not distinctly referable to radicle, cotyledon, or plumule. The oily substance adhering to the spores of Lycopodiaceæ.

VITI'COLUS—Living on or within the vine.

VITI'CULA—Synonym for "Surculus." VITICULO'SUS—Producing viticulæ.

VI'TREUS—Transparent.

VI'TRICUS—Looking like glass.

VIT'TA—A narrow elongated receptacle of aromatic oil, of which there are often several longitudinally and regularly disposed in the spermoderm in Umbelliferæ. In a transverse section of the fruit they appear as brown dots between the pericarp and albumen.

VITTA'TUS—Striped longitudinally.

VIVIP'AROUS—Bearing young plants in place of flowers and seeds. (See *Asplenium viviparum.*)

VOLU'BILIS—Twisting spirally round a support. (See the stems of plant called Climbing Iceplant or Lamb's-tails, *Boussingaultia baselloides.*)

VOLU'TUS—Rolled up in any direction.

VOL'VA—A membrane which completely invests certain Fungi in their early stages, and which bursts open as the contents develop.

WARTS—Hard or firm excrescences.

WHORL—Any set of organs or appendages arranged in a circle round an axis, and in, or very nearly in, a plane perpendicular to it. WHORLED—Synonym for "Verticillate."

XANTHOPHYLL', XANTHOPHYL'LUM — A yellow colouring matter in plants. *Xanthorrhœa*, the Grass-tree, received its name from the yellow resin which it exudes.

XERAMPELI'NUS—A very dull brown red; red with much grey.

XE'ROS—Dry, as in *Xerotes.*

XI'PHOPHYLLUS — Having sword-shaped leaves, or ensiform leaves.

XYLOCAR'PUS—When fruit becomes hard and woody.

XYLO'DIA, XYLO'DIUM—The fruit of *Anacardium,* unsymmetrical, monospermous, woody, and seated on a fleshy support. Also synonym for "Achenium." (See fruit of *Semecarpus anacardium,* a common tree of our tropical coast, and also planted in many places about Brisbane.)

XYLOMY'CES—Fungi which grow upon wood or bark.

ZO'NATUS, ZONED—Applied to organs when the colour is in bands. (See the leaves of the horseshoe *Pelargonium, P. zonale.*)

ZOO'CARP, ZOADU'LA, ZOOSPER'MA — The spores of certain Algæ, which are for a time endowed with powers of locomotion.

ZO'OGONIDIA—Gonidia endowed with active motion.

ZO'OSPORANGIUM, ZOOSPORANGE — Sporangium enclosing zoospores.

ZO'OSPORES—Locomotive motile spores.

ZY'GOS—A yoke, as *Zygophyllum.*

ZY'GOSPORES—A spore resulting from conjugation.

ERRATA.

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Page 18—"AMADON" should be "AMADOU."

„ 25—"*Datura cornigery*" (see "Cornigera") should be "*Datura cornigera.*"

„ 48—"*Alcornea*" (see "Parthenogenesis") should be "*Alchornea.*"

„ 55—"PURPURASCEUS" (see "Purple") should be "PURPURASCENS."

„ 62—"*Zingeber*" (see "Sialagogue") should be "*Zingiber.*"

SUPPLEMENT.

AB'ACA—A name given in the Philippine Islands to *Musa textilis*, the plant which yields the fibre known as Manilla Hemp.

ACHOTE—The seeds of the Arnotto—*Bixa orellana*.

ACH-ROOT—The root of *Morinda tinctoria*, used in India as a dye.

A'CIES—The edge of anything; the angles of certain stems. An edge formed by the intersection of two planes.

ACRAMPHI'BRYA—Plants that grow both at the point and along the sides, as endogens and exogens.

ACRO'BRYA—A term used by Endlicher, synonymous with "Acrogens."

AC'ROSPIRE, ACROSPI'RA — The first leaf that appears when corn sprouts. It is a developed plumule.

ALBEFAC'TIO—A condition of plants induced by absence of light, commonly called blanching, in which little or no chlorophyll is formed; the peculiar secretions are diminished, and the tissues are tender and unnaturally drawn out; and thus plants which in a state of health are tough, unwholesome, and unfit for food, become palatable and wholesome.

ALFAL'FA—The Spanish name of Lucerne, *Medicago sativa*.

AFTERMATH—The grass which springs up after mowing.

AN'BURY—A gouty nodular condition of certain roots, arising from the presence of grubs.

AN'IME—A resin procured from *Hymenæa Courbaril*. The name is also applied to other clear varnish resins.

AN'THOCY'ANE—The blue colouring matter of plants.

ANTICAL—Placed in front of a flower, the front being regarded as the part most remote from the axis. Thus the labellum of an Orchid flower is antical.

AQUOSUS—Watery.

BABOOL—The Indian name of *Acacia arabica*. The gum is known as "Gattie."

BIMUS—Lasting two years.

BLADE—The lamina or expanded part of a leaf.

BLASTE'MA—The axis of an embryo, comprehending the radicle and plumule, with the intervening portion; also the thallus of a Lichen.

BLASTUS—The plumule.

BLEPHARIS—The eyelash, used to denote that an organ bears a fringe of fine hairs.

BOMBYCINE—Silky, feeling like silk.

BORDEAUX MIXTURE, THE ORIGIN OF—Great discoveries are frequently made by accident, or, at least, by indirect means. It appears that the mixture of copper-sulphate and lime which is proved to be so valuable for the Vine-mildew, Peronospora, Potato-mildew, as well as for insects, was first of all used in the vineyards near Bordeaux to keep off thieves! The outer rows of the vines were sprayed with this substance to render the berries distasteful to marauders. After a time it was discovered that these outer rows did not suffer from the mildew, whilst the inner rows, which were not washed with the copper solution, suffered; and this particular mixture, says Professor Riley, has since remained at the head of the cheap remedies for many fungous diseases.—*Gard. Chronicle*, August, 1890. The following is another extract from the same source. It is said to be easier to make than the ordinary Bordeaux Mixture, and its effects more lasting, and it does not injure the foliage:—Sulphate of copper, 2 kilos; Water, 15 litres. Dissolve, and add—Carbonate of soda, 3 kilos. A precipitate of oxide of copper results; and when this is effected, add—Treacle, 250 to 300 grammes. Stir occasionally, and, after 12 hours, add—Water, 100 litres. The mixture may be applied with a spray-pump. Experiments were made with this mixture in the garden of the National School of Horticulture, Versailles.

BRINGALL or BRINJAL—The fruit of the Egg Plant, *Solanum melongena*.

CALCEOLATE—Having the form of a slipper or round-toed shoe.

CARIES—This word is used in vegetable pathology to denote decay of the wall of the cells and vessels, whether attended by a greater or less degree of moisture. Life is necessarily limited in all organic structure, and therefore the time must come when the oldest parts of trees must submit to decomposition; and as soon as this commences it acts as a putrefactive fervent, and involves neighbouring sound tissue. In plants of shorter duration, decay takes place from various causes, sometimes from mere constitutional peculiarities, sometimes from a cessation of vital functions, sometimes again from atmospheric or other outward agents, and sometimes from parasitic Fungi. The rapidity with which the mischief spreads when once set up is exemplified by the potato murrain, and the black spot of orchids; a few days in either case being sometimes sufficient to induce complete decomposition. The decay of fruit though not due, as is sometimes supposed, to minute Fungi, is certainly promoted by their presence, the mere contact of the tissues and parasite being sufficient to set up putrefactive action.—*Rev. M. J. Berkeley*.

Caro—The fleshy part of fruit.

Carposto'mium—The opening into the spore-case of Algæ.

Ceno'bium, Cenobionar, Cenobioneus—Such fruits as those of *Labiatæ*, *Boragineæ*, &c., which consist of several distinct lobes, not terminated by a style or stigma.

Cho'rion—A carpel; also the pulpy matter which fills the interior of a young seed before impregnation.

Constricted—Tightened or contracted in some particular place, as the top of the corolla-tube of *Alstonia constricta*—the fever or bitter-bark flowers.

Cor Seminis—An old name for the embryo.

Coumarin—The fragrant principle of the Tonka Bean.

Cribriform—Riddled with holes like a sieve.

Cribrose—Perforated like a sieve.

Cymbellæ — Reproductive locomotive bodies, of an elliptical form, found in some Algæ.

Cyst—The spore-case of some Fungi; also the hollow spaces in parenchyma, in which oily matter collects, as in the rind of an orange.

Damar or Dammer—A viscid resinous product of *Canarium microcarpum*. *C. strictum* produces what is known as the Black Dammer. The White Dammer and Dammer Pitch is produced by *Vateria indica*.

Drastic—Applied to medicines which act violently.

Duk—The horsehair-like fibres of *Saguerus saccharifer*.

Dynamis—A power. A figurative term employed by Linnæus to express the degrees of development of stamens. Thus his "Didynamia" signified stamens of two different lengths, or of two different degrees of development.

Eddoes—The tuberous stems of various Araceous plants. (See *Colocasia antiquorum*, "Tara.")

Edging—This term is applied to dwarf plants, turf, or material of any description used in gardens for dividing beds, borders, &c., from the walks.

Elaio—In Greek compounds, signifies "Olive."

Emarcid—Flaccid, wilted.

Embolus—A plug; a process which projects downwards from the upper part of the cavity of the ovary in *Armeria*, and closes up the foramen of the ovule.

Emphysematose—Bladdery, resembling a bladder.

Endogo'nium—The contents of the nucule of a *Chara*.

Escharotic—Having the power to burn the skin.

Exanthemata—Skin diseases, blotches of leaves, &c.

Eye—A term used in gardening for a leaf-bud; also for the centre or the central markings of a flower.

Fecundation—The act of making fruitful. Dr. Lindley tells us that the large fleshy roots of *Basella tuberosa* are considered by the people of Quito to possess the power of increasing fecundity.

Felleus—Bitter as gall.

Forcipate, Forcipa'tus (*Forceps*, nippers), Forfica'tus (*Forfex*, scissors)—Forked, like a pair of pincers or scissors, separating into two distinct branches, more or less apart.

Fracid—Of a pasty texture; between fleshy and pulpy.

Frondescence—The leafing of plants was denominated by Linnæus their frondescence.

Frustules—The joints into which plants of Diatomaceæ separate.

Fulcra, Fulcrate (*Fulcrum*, a prop)—Additional organs, such as pitchers, stipules, tendrils, spines, prickles, hairs, &c.

Gattie—An Indian gum obtained from the Babool, *Acacia arabica*.

Gelineæ—Cells in Algæ secreting vegetable jelly.

Glareose—Growing in gravelly places.

Gon'gylus—The spores of certain Fungi. Also a round, hard, deciduous body, connected with the reproduction of certain Algæ.

Grossus—Coarse; larger than usual; thus *Grosse-serratus*=coarsely serrated.

Gyni'cus or Gyni'zus—The depressed stigmatic surface of Orchids.

Habitat—The situation in which a plant grows in a wild state.

Homoios or Homo—In Greek compounds, signifies similar or alike.

Humifuse, Humifu'sus—Spread over the surface of the ground.

Hygroscopi'city—The property of extending or shrinking upon the application or removal of water. (See the awns of the Bunch Speargrass.

Introsusception—This term denotes the act of taking in, whether of fluids by the roots or of gases by the foliage.

Icones—Pictorial representations of plants.

Isoph'orous—Transformable into something else. Thus *Paxtonia* is an isophorous form of *Spathoglottis*.

Lageniform—Shaped like a Florence flask.

Leaf Propagation—The propagation of plants by their leaves is a method of rapid increase adopted with great advantage in the case of those which succeed. An incision made in any firm part of the midrib, as well as the petiole, will in certain instances induce the production of a young plant. The kinds of plants to be so propagated should have, as a rule, thick fleshy leaves, such as Begonias, Gloxinias, &c. Take the leaves which are nearly fully matured, not too old, and peg them on light sandy soil, and keep them somewhat dry, until the bulbil-like plants are formed where the incisions were made.

LECHEGUANA HONEY—A dangerous kind of honey, supposed to be furnished by *Paullinia australis* and *Serjania lethalis.* This is given because plants of the above genera are to be met with in garden culture.

LEPALS, LE'PALUM—Sterile stamens.

LIANE—A woody twining or climbing plant, like those which occur in tropical forests.

LIF, LIEF, LOOF—Names for the fibre by which the petioles of the Date Palm are bound together.

LITMUS—A blue dye prepared from *Roccella tinctoria* and some other Lichens, by maceration and occasional agitation in a mixture of urine, lime, and potash. A kind of fermentation takes place, and the lichen becomes first reddish and then blue. When dried it has, when rubbed with the nail, a coppery tint like indigo. Litmus is of great importance to chemists, as it affords a delicate test for acids and alkalies, since blue litmus acquires from acids a red tint, which is restored by alkalies. For this purpose paper is steeped in a solution of litmus, and then dried and bound up in packets; when so prepared, it is sold under the name of test-paper.

LITUATE—Forked, with the points a little turned outwards.

LITURATE, LITURA'TUS (From *Litura*, a blot)—When spots are formed by the abrasion of the surface.

MELLIGO—Honey-dew; a disease of plants in which an unnatural secretion of sweet matter appears on their surface.

MEMNONIUS—A brown-black colour; pitch black.

MORIA—The parts of a flower in general; as *pentamorius*, which signifies all the parts being arranged in fives.

NEMATHECIA—Warty excrescences of the fronds of certain rose-spored Algæ, producing tetraspores, as in *Phyllophora.*

NEMATOID WORMS (Anguillulidæ)—This group of microscopic animals give rise to disease in both wild and cultivated plants. They differ from the earthworms and other true worms, and exhibit a much lower type of structure. They are minute, white or translucent, and usually so small as to resemble short, slender pieces of hair, even when visible at all without a magnifying glass. All those kinds that cause disease in plants are very minute, and live in the interior of the parts they attack, so that these parts must be cut into, or opened, before the worms are discovered. When seen through a microscope they appear slender, tapering both ways, but the front end, in which is the mouth, is rather blunt, the hinder end, or tail, is usually long, and tapers gradually, or it may bear an extension of the skin along one or both sides. There is no head, nor are there limbs or organs of sense of any kind visible. The mouth opens in front; on the gullet and intestines there are usually two swollen muscular bodies, which serve for helping to prepare the food in its passage downwards. The intestine opens below in the anus, some distance from the end of the body, the tail, of varying length, lying behind it. The characters of the genera and species are recognisable usually in the mature animals alone. The situation of the sexual openings, and, in the males, two horny out-growths, connected with reproduction, assist in supplying distinctive characters, as do also peculiarities in the internal organs, which can be made out with no great difficulty under the microscope in the living animals. Some years ago Dr. J. Bancroft drew attention to the destruction these minute animals were doing to the Banana and a number of other plants in and around Brisbane. In Europe they have been found to seriously damage both the roots and foliage of florist plants; in South America the coffee plants; in Europe also they are said to have done more or less damage to the sugar beet and the grape vines. The best mode of prevention consists in changing the crops on any piece of ground, so as to prevent suitable food for the Nematodes being afforded. On infested soil, therefore, plants liable to attack should be followed by others unsuitable as food for the worms. This recommendation could hardly be carried out with regard to trees.

NEPHROSTA—The spore-case of Lycopods.

NODULES—A name given to knots of wood which are found in the bark of various trees. They vary both in shape and size, being from the size of a pin's head to over a foot in diameter, and from globular to so irregular in form as to resemble a rhizome of ginger. They are supposed to be born in the parenchymatous tissue, and at first completely free and isolated in the bark, with a peculiar bark of their own. When in progress of development these nodules are brought in contact with the wood of the tree which bears them, the intermediate bark may be destroyed by the pressure to which it is subjected, and then the wood of the nodule may become adherent to the wood of the tree; these curious formations are found very large in the bark of our Bunya trees and quite free. The wood of the nodule is arranged in concentric zones around a common centre, and has both pith and medulary rays, and however irregular, the form is evidently in all cases a genuine *sphere;* it has all the elements of organisation found in the trunk of the tree, but arranged differently. In the Cedar of Lebanon and the Olive these nodules are often abundant and in the latter have been seen to produce a small branch from the summit, and we find it stated that the Olive may be and is at times propagated by this means, the name of *Uovoli* being given to them when used for propagation. I have, however, always failed in obtaining roots from such cuttings, although they may have kept alive in the propagation frames for one, two, or more years. Even bottom heat failed to induce rooting.

Onomatology—That branch of knowledge which relates to the rules to be observed in the construction of names.

Oolysis—Monstrous ovular development in plants.

Orbil'la—Applied to the shields of the Lichen *Usnea*.

Osus—A termination indicating augmentation, as *radiosus*, having a large root.

Penniform, **Pennifor'mis** — Feather-shaped. Having the ribs of a leaf arranged as in a pinnated leaf, but confluent at the point, as in the Date and some other palms, &c.

Phalanges — Bundles of stamens; a collection of several stamens joined more or less by their filaments.

Phycology—That part of Botany which treats of the Algæ, or so-called Sea-weeds.

Phyco'mater—The gelatines in which the sporules of Algæ first vegetate.

Phykenchyma—The elementary tissue of Algæ.

Phyllobryon—The contracted pedicel of an ovary; such as occurs in some peppers.

Phytoerosia—That part of Botany which relates to the diseases of plants.

Phytogelin — The gelatinous matter of Algæ.

Pulu—The silky hairs or scales of a species of *Cibotium*.

Rattan—A commercial name for the stems of *Calamus* or *Lawyer canes*.

Rattoon or **Ratoon**—One of the stems or shoots of sugar-cane of the second year's growth from the root, or later.

Rel'iquiæ — Leavings; the withered remains of leaves which do not fall off, but perish upon a plant and adhere to it. Synonym for "Induviæ."

Revalenta Arabica—The prepared farina of the Lentil. Sold also as Ervalenta.

Right-handed—See "Dextrorsum."

Scripture-worts—A name given to the species of *Opegrapha*, or Letter Lichens.

Scro'tum—A pouch; the volva of some Fungi.

Teleian'thus—Perfect flower. Synonym for "Hermaphroditus."

Tere'do—A boring animal. Any disease in plants produced by the boring of insects.

Tropis—In Greek compounds, signifies the keel of a papilionaceous flower, or any part resembling it.

Tubi, **Tu'buli**—The pores of certain Fungi; also ringed tubes found in the globule of a *Chara*.

Ura—In Greek compounds, signifies a tail or tail-like process.

Ver'tex—The top or summit of any part.

Wort—A term applied to plants generally, and sometimes especially to those of herbaceous habit. Also used to designate a sweet infusion of malt or grain. Chaucer's "Wortes" applies to cultivated plants generally.

ADDENDA.

(The descriptions given have particular reference to Australian plants.)

Order LEGUMINOSÆ.

Amongst Dicotyledons this order stands second in point of numbers. It contains about 7,000 species in 400 genera, and the species are met with in every part of the globe.

Flowers, irregular, usually hermaphrodite; regular, usually polygamous. Known species over 6,500. Next to Compositæ, this is the largest natural order of phænogamous plants. Calyx of 5 or rarely fewer usually united sepals, campanulate or tubular, more or less divided into 5 or fewer teeth or lobes, or rarely the sepals entirely distinct. Corolla of 5 or rarely fewer petals, perigynous or rarely hypogynous; very irregular in the first suborder (Papilionacæ), less so in the second (Cæsalpinieæ), small, regular, and the petals often united in the third (Mimoseæ). Stamens twice the number of petals, rarely fewer, or sometimes indefinite, inserted with the petals. Ovary single (consisting of a single carpel), with 1, 2, or more ovules arranged along the inner or upper angle of the cavity; style simple. Fruit, a pod (legume), usually flattish, and opening round the margin in 2 valves, but sometimes follicular or indehiscent, or variously shaped. Seeds with 2 large cotyledons, a short radicle, and, with few exceptions, little or no albumen. The species consist of herbs, shrubs, trees, or climbers. Leaves alternate, or rarely opposite, usually furnished with stipules, compound, or reduced to a single leaflet, or to a dilated petiole (phyllodium), or in a few cases really simple, the leaflets or leaves entire or rarely toothed or lobed. Flowers in axillary or terminal racemes, spikes, or clusters, when terminal, often becoming leaf-opposed by the growth of a lateral shoot rarely solitary and axillary.

SUBORDER I. PAPILIONACEÆ.

Flowers 5-merous. Corolla very irregular, papilionaceous, or very rarely nearly regular, the petals 5, imbricate, the upper one, or standard, always outside in the bud. Stamens 10, or, very rarely, 9 or 5. This suborder supplies many important fodders, culinary vegetables, dyes, fibres and medicines.

Tribe 1. PODALYRIEÆ.—Shrubs, rarely herbs and very rarely climbers or small trees. Leaves simple or digitately compound, very rarely pinnate. Stamens 10, all free or scarcely united at the base. Pod not articulate. Examples: *Daviesia*, *Pultenæa*, or the common Dogwood, *Jacksonia scoparia*. Species of the two first as well as the last named plants are amongst the most common of our Queensland shrubs.

Tribe 2. GENISTEÆ.—Shrubs or herbs, very rarely small trees. Leaves simple or with 1 or 3 or more digitate leaflets, rarely 1-foliolate. Stamens all united in a sheath open on the upper side in all the Australian genera (except in a species of *Hovea*). Example:

Crotalaria, or "Rattlepod," common garden plants; some yield good fibre and are cultivated for that purpose. *Lupinus*, the well-known flower; *Genista* and *Spartium*, the Brooms; or *Ulex Europæus*, the Furze bush.

Tribe 3. TRIFOLIEÆ.—Herbs, very rarely shrubs. Leaflets usually 3, pinnate or rarely digitate, the veinlets extending to the edge and often produced into minute teeth. Peduncles, racemes, or flower-heads axillary (or apparently terminal by the reduction of the upper floral leaves), never leaf-opposed. Upper stamens free (except *Ononis*), the others united in a sheath. Pod not articulate. Examples: *Medicago*, *Trifolium* (clover), the Lucerne and Clovers.

Tribe 4. LOTEÆ.—Herbs, rarely shrubs. Leaves pinnate, leaflets entire. Flowers capitate or umbellate on axillary peduncles. Upper stamen usually free, at least at the base, the others united in a sheath; filaments either all or 5 only dilated towards the end. Pod not articulate. Example: Lotus, or Birdsfoot Trefoil. Some of the species are pretty border plants.

Tribe 5. GALEGEÆ.—Herbs not twining, shrubs, or rarely trees or tall woody climbers. Leaves pinnate, rarely reduced to 3 or 1 leaflets. Stipellæ none, or setaceous in a few pinnate genera. Stamens 9, upper one usually free, at least at the base, the others united in a sheath, very rarely all united; filaments filiform. Ovules 2 or more (except in *Indigofera linifolia* and *Psoralea*). Pod not articulate, 2-valved (except in *Psoralea*). Examples: *Indigofera*, *Millettia*, *Swainsona* or Darling Pea.

Tribe 6. HEDYSAREÆ.—Herbs, or very rarely shrubs or trees. Leaves various. Pod separating transversely into 1-seeded articles, usually indehiscent, or sometimes reduced to a single 1-seeded indehiscent reticulate article. An artificially distinguished group, having the foliage and other characters sometimes of the Loteæ, sometimes of the Galegeæ, or of the Phaseoleæ. Examples: *Zornia*, *Desmodium*, *Lespedeza*, or the Earth-nut, *Arachis hypogæa*.

Tribe 7. VICIEÆ.—Herbs. Leaves abruptly pinnate, the common petiole usually ending in a tendril or fine point. Flowers and fruit of Phaseoleæ. Peduncles or racemes axillary. Examples: *Pisum*, Pea; *Vicia*, the Vetch; *Lathyrus*, the Sweet Pea; or *Abrus*, Crab's-eyes.

Tribe 8. PHASEOLEÆ.—Herbs, usually twining or prostrate, rarely erect or shrubby at the base, very rarely trees. Leaves pinnately 3-foliolate or 1-foliolate, rarely 5 or 7-foliolate, with stipellæ (digitate in *Flemingia* and a very few species of other genera, stipellæ minute or none in *Rhynchosia* and its allies). Upper stamen usually free, at least at the base or all but the base. Anthers uniform or nearly so (except in *Mucuna*, in which they are alternately longer and erect, and shorter versatile and often bearded). Pod not articulate, 2-valved. Examples: *Phaseolus*, *Canavalia*, *Glycine*, *Hardenbergia*, the Bushman's Sarsaparilla; *Erythrina*, the Cork or Coral tree; *Canavalia gladiata*, Sword Bean, &c.; all plentiful in gardens.

Tribe 9. DALBERGIEÆ.—Trees or woody climbers. Leaves pinnate, with 5 or more leaflets or sometimes 1 leaflet, very rarely 3. Stipellæ none or small and subulate. Stamens all united in a sheath or tube or into two parcels of 5, very rarely the upper one free. Pod indehiscent. Examples: *Lonchocarpus*, *Pongamia*. The first is a common woody climbing plant of the Brisbane River bank; the other a tree very plentiful in Tropical Queensland and in plantations about Brisbane.

Tribe 10. SOPHOREÆ.—Trees, woody climbers, or rarely tall shrubs or almost herbaceous. Leaves pinnate, with several leaflets, without stipellæ, or reduced to a large leaflet. Stamens all free or scarcely united at the base. Examples: *Sophora*, *Castanospermum*, the Moreton Bay Chestnut or Bean tree. A species of the first-named genus is often to be met with on the borders of scrubs; another forms a small tree on the tropical coast.

Tribe 11. SWARTZIEÆ.—Tall shrubs or trees. Leaves pinnate, with many or reduced to 1 leaflet. Petals 6, 1, or none. Stamens indefinite or rarely 10, free. Pod not articulate. So far as known, no representative of this tribe is to be seen in Queensland.

SUBORDER II. CÆSALPINIEÆ.

Flowers usually 5-merous, very rarely 4-merous or 3-merous; the sepals united at the base into a short tube, lined by the disk, bearing at its margin the petals and stamens, rarely forming a campanulate or tubular calyx with the stamens near the base, as in Papilionaceæ, the free part of the sepals or lobes of the calyx imbricate or rarely valvate. Corolla irregular or nearly regular, either with the 5 (or 4 or 3) petals variously imbricate in the bud, but the upper one never outside and usually quite inside, or in some genera some or all of the four lower petals wanting. Stamens 10 or fewer, or indefinite, free or rarely more or less united, all perfect or several of them reduced to staminodia. Ovules anatropous or nearly so. Radicle of the embryo short and straight. From this suborder is obtained timber, dyes, gums, medicines, and perfumes.

Tribe 12. SCLEROLOBIEÆ.—Leaves impari, or rarely abruptly pinnate. Calyx segments usually divided to the disk, imbricate. Petals 5, slightly unequal. Ovary stipitate. Ovules 3 or many. No representatives to be seen in Queensland.

Tribe 13. EUCÆSALPINIEÆ.—Leaves all bipinnate or rarely bipinnate and simply pinnate on the same plant (see *Gleditschia*). Calyx divided to the disk. Petals usually 5, subequal or but slightly unequal. Stamens 10 (or fewer in *Gleditschia*). Anthers versatile. Ovary stipitate. Ovules 2 or many, or rarely 1. For examples see *Cæsalpinia*, *Hæmatoxylon*, and *Gleditschia*, Divi-divi, Logwood, and Honey Locust, all common trees in cultivation.

Tribe 14. CASSIEÆ.—Leaves impari or abruptly pinnate. Calyx segments or sepals 5, rarely 4 or 3, free to the base, imbricate or very rarely subvalvate. Petals 5 or fewer or more. Stamens 2 to 10; anthers basi or dorsifixed, dehiscing by longitudinal clefts or pores. Ovary stipitate. Ovules 2 or many, or rarely 1. Examples: *Cassia*, *Ceratonia*, Pudding-pipe tree, and the Carob.

Tribe 15. BAUHINIEÆ.—Leaves simple, entire, 2-lobed, or rarely 2-foliolate. Calyx above the disk gamosepalous or valvately parted, the apex often 5-dentate, or rarely 5-lobed. Petals 5. Anthers versatile. Ovary stipitate, free, or the stipes adnate to one side of the calyx-tube. Ovules 2 or many; seed albuminous. Examples: ***Bauhinia***, ***Cercis***, or Judas tree.

Tribe 16. AMHERSTIEÆ.—Leaves abruptly or rarely imparipinnate, 2 or many or very rarely 1-foliolate. Calyx-lobes free to the disk, imbricate or very rarely valvate. Petals 5 or fewer or none. Anthers versatile. Ovary stipitate, adnate with the calyx tubes bearing the disk; ovules 3 or many. Examples: *Tamarindus*, *Schotia*, *Saraca*, the Tamarind, Boerboom (*Jonesia*, synonym for *Saraca*), one of the most beautiful of our garden trees.

Tribe 17. CYNOMETREÆ.—Leaves abruptly pinnate 2 to many foliolate. Calyx-lobes free to the disk, imbricate or valvate. Petals, 1, or 5 or fewer or none. Anthers versatile. Ovary 1 to 4-ovulate. Flowers usually small. Example: *Cynometra*, this tropical coast tree is probably the only example obtainable in Queensland.

Tribe 18. DIMORPHANDREÆ.—Leaves bipinnate or very rarely simply pinnate. Flowers small, irregular in paniculate cylindrical spikes, sessile or very shortly pedicellate. Calyx campanulate, 5-fid. Petals 5, imbricate. Anthers versatile. Ovary with numerous ovules. Example: *Erythrophlæum*, or the so-called Leguminous Ironbark of Leichhardt, a tree of Tropical Queensland.

SUBORDER III. MIMOSEÆ.

Flowers, 5-merous, 4-merous, or rarely 3-merous, or 6-merous, small, regular, sessile in spikes or heads, or very rarely shortly pedicellate, often polygamous. Sepals valvate, often united. Petals valvate, except in *Parkia*, often united. Stamens, equal to or double the number of the petals or indefinite. Seeds usually flattened, with a hard, shining testa. Albumen none or very scanty. Radicle of the embryo short and straight. Leaves bipinnate, except in the American genus *Inga*. The important products of this suborder are timber, bark for tanning, gums, and flowers for perfumes.

Tribe 19. PARKIEÆ.—Calyx-teeth very short, broad, imbricate, corolla, 5-fid. Stamens, 5 or 10; anthers with a deciduous apical gland. No examples to be had in Queensland.

Tribe 20. ADENANTHEREÆ.—Flowers most frequently 5-merous. Calyx valvate. Stamens 10 (rarely 5); anthers with a deciduous apical gland. Examples: *Entada*, *Prosopis*, and *Neptunia*, Matchbox bean, Algaroba, and Queensland Sensitive Plant, abundant about the Darling Downs and Ipswich.

Tribe 21. EUMIMOSEÆ.—Flowers 4-5-merous, rarely 3 or 6-merous. Calyx valvate or pappiformis, or none. Stamens 5 or 10 (4-8); anthers without apical glands; pollen granular. Example: *Mimosa*, the common Sensitive Plant, found naturalised in many parts in Queensland.

Tribe 22. ACACIEÆ.—Flowers, 4-5-merous, rarely 3-6-merous. Calyx valvate, very rarely none. Stamens numerous, frequently very numerous, free or consolidated at base only with disk; pollen-grains cohering in masses. Example: *Acacia*, any Myall, Brigalow, or Wattle.

Tribe 23. INGEÆ.—Flowers most frequently 5-merous. Calyx valvate. Stamens numerous, frequently very numerous, rarely 10 to 15; anthers small; filaments united more or less in a tube; pollen-grains cohering in masses. Examples: *Albizzia*, *Calliandra*, and *Inga*; this latter has simply-pinnate leaves. The first, "Woman's tongue" tree, is largely planted for shade.

TRIBE VIII. PHASEOLEÆ.

PHASEOLUS, Linn.

(From *phaselus*, a little boat; the supposed resemblance in the pods.)

Upper teeth of calyx free or connate, the others deltoid or lanceolate. Standard orbicular, recurved or subtwisting, the edges inflexed towards the base; wings obovate, or rarely oblong, equalling or exceeding the standard, adhering to the keel above the claw, often twisted; keel linear or obovate, with a long obtuse spirally-twisted beak. Upper stamen free, often incrassated or appendiculate above the base, the rest connate; anthers uniform. Ovary subsessile, multiovulate; style incrassated within the beak of the keel, and twisted with it, usually longitudinally bearded upwards; stigma oblique. Pod linear or falcate, terete or compressed, 2-valved, thinly septate between the seeds. Usually climbing herbs with pinnately trifoliolate leaves.

P. vulgaris, *Linn.* The Common French Bean. Stems annual, wide-climbing, sub-glabrous. Leaflets 3, the central one broad-ovate, 4 to 5 inches long, acute, both sides sub-glabrous. Peduncles in pairs, 1 to 2 inches long, 2 or 3-flowered. Pedicles 2 to 4 lines; bracteoles ovate. Calyx campanulate, ¼-inch deep, upper lip truncate, lower 3-toothed. Corolla white or lilac, an inch deep. Pod 4 or 5 inches long, ½-inch broad, nearly straight, compressed, glabrous, 10 to 12-seeded.

Order MYRTACEÆ.

An important order, especially from an Australian point of view, as it includes much of our timber and fruits, as well as aromatic oils, spices, and dyes. The number of species are about 1,800; genera about 80.

Calyx-tube adnate to the ovary at the base or up to the insertion of the stamens; limb more or less divided (usually to the base) into 4 or 5, very rarely 3 or more than 5, lobes or teeth, or reduced to a narrow border, or entirely wanting; lobes usually imbricate or open in the bud; petals usually as many as calyx-lobes very much imbricate in the bud, the external one sometimes larger than the others, but usually all nearly equal when expanded, sometimes all concrete and falling off in a single operculum, or rarely entirely wanting. Stamens indefinite, usually numerous, or rarely few and definite, inserted in 1 or several rows on a disk, either thin and lining the calyx-tube above the ovary and forming a thickened ring at its orifice, or thicker and forming a ring close round the summit of the ovary; filaments free or rarely united into a ring or tube at the base, or into as many bundles as there are calyx-lobes; anthers 2-celled, versatile or attached by the base, the cells opening in longitudinal slits, or rarely in terminal pores. Ovary inferior or rarely almost superior, but enclosed in the calyx-tube, sometimes 1-celled, with a placenta attached to the base or adnate to one side, more frequently 2 or more celled, with the placentas in the inner angle of each cell, very rarely 1-celled, with 2 parietal placentas. Style simple, with a small or a capitate or peltate, very rarely lobed, stigma. Ovules 2 or more to each placenta in 2 or more rows, or very rarely solitary, erect pendulous or laterally attached, anatropous or amphitropous. Fruit inferior, adnate to the calyx-tube, and crowned by the persistent limb, or marked by its scar when deciduous, or very rarely half or almost wholly superior, and surrounded at the base by the persistent calyx-tube, either capsular and opening longitudinally at the summit in as many valves as cells, or indehiscent, dry, and 1-seeded, or succulent and indehiscent. Perfect seeds, usually very few or solitary in each cell, even when the ovules are numerous, or rarely numerous and perfect; testa either thin and membranous, or crustaceous, fleshy, or bony. Albumen none, or very scanty near the hilum. Embryo straight or variously curved, fleshy, with minute cotyledons at one end, or with large, flat, or variously folded cotyledons, or with thick, fleshy, distinct or consolidated cotyledons, and an exceedingly short radicle, or rarely apparently homogeneous, the cotyledons inconspicuous before germination. Abortive ovules in many capsular genera, enlarged without being fertilised, and simulating the seeds, but of a hard, nearly homogeneous, woody or granular consistence. Trees or shrubs, very rarely under shrubs. Leaves simple, entire, or rarely obscurely crenate-toothed, opposite or less frequently alternate, more or less dotted in all but the Lecythideæ, with small resinous glands, either pellucid or black and superficial, often scarcely visible when the leaf is thick. Stipules none, or rarely very minute and fugacious. Flowers solitary or in racemes, panicles, or cymes, axillary or apparently terminal from the terminal bud, not growing out till after the flowering is over. Bracts solitary at the base of the peduncle, or forming an imbricate involucre from the abortion of the lower flowers. Bracteoles 2 at the base of or on the pedicel, sometimes very small or abortive, and often exceedingly deciduous.

Tribe 1. CHAMÆLAUCIEÆ.—Ovary 1-celled; fruit 1 or rarely 2-seeded, indehiscent. Shrubs often heath-like, with small leaves. Flowers usually small, solitary or very rarely 2 or 3 together in the axils of the leaves or bracts, either along the branches or in terminal heads, the floral leaves either like the stem-leaves or dilated and bract-like or forming an involucre. Examples: *Darwinia*, *Calythrix*. The species of this tribe for the greater part belong to Western Australia, and are noted more for beauty than utility.

Tribe 2. LEPTOSPERMEÆ.—Ovary divided into 2 to 5 or more cells; fruit dry, capsular, opening at the top loculicidally in as many valves as cells, or very rarely 1 or 2-seeded and indehiscent. Examples: *Bæckea*, *Syncarpia*, *Eucalyptus*. From this tribe we have timbers and essential oils of great value. The timbers are mostly hardwood, and include Gums, Ironbarks, Box, Tea-tree, Turpentine, Mahogany, Tallow-wood or Tee, &c.

Tribe 3. MYRTEÆ.—Ovary divided into 2 or more cells, or if 1-celled with 2 placentas; fruit an indehiscent berry or drupe; leaves opposite, dotted. Examples: *Myrtus*, the Clove; *Eugenia*, or Rose Apple; *Pimenta*, the Allspice; *Psidium*, or Guava, &c.

Tribe 4. LECYTHIDEÆ.—Ovary divided more or less completely into 2 or more cells; fruit woody, fibrous, or fleshy, indehiscent or opening in an operculum at the top; leaves alternate, not dotted. Examples: *Careya*, *Barringtonia*, are two genera found in Tropical Australia. The Brazil nut, *Bertholletia*, was at one time growing in the Brisbane Garden, but has never fruited in Queensland.

TRIBE III. MYRTEÆ.

EUGENIA, Linn.

(In honour of Prince Eugene of Savoy, who was a protector and encourager of botany.)

Calyx-tube from globular to narrow-turbinate, not at all or more or less produced above the ovary; lobes 4, very rarely 5, from large and imbricate to very short and scarcely prominent above the truncate margin. Petals 4, very rarely 5, either free and spreading, or more or less connivent, or connate and falling off in a single calyptra. Stamens numerous, in several series, free or obscurely collected in 4 bundles; anthers versatile, usually small, the cells parallel or very rarely divaricate, opening longitudinally. Ovary 2-celled, or very rarely 3-celled, with several ovules in each cell, or only two in an American section. Fruit a berry or sometimes almost a drupe, or nearly dry with a fibrous rind. Seeds either solitary and globose, or few and variously shaped by compression; testa membraneous or cartilaginous; embryo thick and fleshy, with a very short radicle, the cotyledons either united in an apparently homogeneous mass or more or less separable. Trees or shrubs. Leaves opposite, penniveined. Flowers (in the Australian species) either solitary in the axils, or in lateral or terminal trichotomous cymes or panicles.

E. myrtifolia, *Sims.* Scrub Cherry. A small tree or tall shrub, glabrous. Leaves petiolate, from oval-oblong or almost obovate, to oblong-elliptical or almost lanceolate, obtuse or accuminate, 2 to more than 3 inches long, cuneate or narrowed at the base, finely and almost transversely penniveined. Peduncles axillary, lateral or terminating short leafy shoots, bearing usually 3 to 5 flowers but sometimes more, in a loose trichotomous panicle. Calyx-tube turbinate, 1½ to nearly 2 lines diameter; lobes very unequal, the largest nearly as long as the tube. Petals nearly 3 lines diameter, spreading and separately deciduous. Outer stamens nearly ½ inch long. Ovary about half the length of the calyx-tube, with a cluster of 8 to 10 ovules in each cell. Fruit red, ovoid or nearly globular, crowned by the calyx-limb.

Order RUBIACEÆ.

This is a large and important order, as from its plants we have many most important products, as coffee, gambier, ipecacuanha, quinine, excellent fruits, valuable timber, and useful dyes. The number of species are about 4,100, arranged in a genera of from 330 to 340.

Calyx-tube adnate to the ovary; the limb entire or with as many teeth, lobes, or divisions as lobes of the corolla, rarely more, fewer or none. Corolla gamopetalous, inserted round the epigynous disk; lobes 4, 5, or sometimes more, rarely only 3, either imbricate (often contorted) or valvate in the bud. Stamens as many as lobes of the corolla, alternating with them and inserted in the tube; anthers versatile, with parallel cells opening longitudinally. Ovary inferior, 2 or more celled, with 1 or more ovules in each cell, rarely 1-celled with parietal placentas, or reduced to one 1-ovulate cell; style more or less divided into as many stigmatic lobes as carpels to the gynæcium, or undivided with a thickened entire or notched stigma. Fruit a capsule, drupe, berry, or indehiscent nut. Seeds with a fleshy or horny albumen, and rather small straight embryo with flat cotyledons, or rarely with little or no albumen, and cylindrical embryo with semiterete cotyledons. Trees, shrubs, herbs, and climbers. Leaves opposite or whorled. Stipules interpetiolar, either free or connate with the petioles in a sheath bordered by cilia or leaflike lobes, or with one or two points on each side, or connate within the petioles in a short sheath or ring round the stem. Inflorescence various, usually more or less cymose, axillary or terminal. Flowers occasionally polygamous or unisexual.

SERIES A. Ovules in cells indefinite.

Subseries I. Fruit dry, capsular or 2 to 4-coccus, or nucamentaceous.

Tribe 1. NAUCLEEÆ.—Flowers numerous, sessile or pedicellate, closely packed in globular heads on a small receptacle. Corolla narrow, funnel-shaped, the tube elongate, lobes short imbricate or valvate (never contorted). Anthers inserted in the mouth or throat of the corolla tube, nearly sessile, acute or apiculate. Ovary 2-celled; style much exserted, stigmas clavate fusiform or capitate. Ovules numerous, very rarely solitary. Fruit a multicellular syncarpium or a capsule septicidally 2-valved or 2-4 cocci, many or 1-seeded. Seeds albuminous, minute, with or without wings, radicle superior. Trees, shrubs, or climbers. Examples: *Sarcocephalus* (Leichhardt tree), *Uncaria* (Gambier plant). *Sarcocephalus esculentus* produces the fruit known as Sierra Leone peach or fig. At one time plants of this were in the public gardens.

Tribe 2. CINCHONEÆ.—Corolla lobes valvate, imbricate or twisted. Ovary 2-celled; ovules in cells very numerous; fruit capsular 2-celled. Seeds numerous, minute, peltate, imbricate, winged, albuminous; radicle most frequently superior. Trees or shrubs. Stipules entire except in *Hindsia*, a Brazilian genus. Examples: *Cinchona*, *Bouvardia*, *Manettia*. From plants of this tribe we obtain timber, medicine, edible fruits, and a large number of showy garden shrubs.

Tribe 3. HENRIQUEZIEÆ.—Corolla bilabiate, lobes imbricate; ovary half superior, 2-celled, with 4 ovules in each cell. Fruit capsular. Seeds 2 or 4 in each cell, affixed by the margin, broadly winged, exalbuminous. Brazilian trees with quite entire stipules. No examples probably to be seen in Queensland.

Tribe 4. CONDAMINIEÆ.—Corolla-lobes equal, valvate. Ovary, 2-celled. Fruit capsular; seeds in each cell very numerous, densely packed, horizontal, not winged or with obscure wings, albuminous; embryo minute. Trees or shrubs with simple or 2-partite or quite entire stipules. Doubtful if examples are in Queensland.

Tribe 5. RONDELETIEÆ.—Corolla-lobes equal, imbricate or twisted. Ovary 2-celled. Fruit capsular; seeds in cells numerous, horizontal; minute, not winged, albuminous; embryo clavate or cylindric. Trees or shrubs. Stipules simple, very rarely 2-fid, quite entire. Examples: *Rondeletia*, *Wendlandia*, many handsome garden plants.

Tribe 6. HEDYOTIDEÆ.—Corolla-lobes valvate. Ovary 2, very rarely 3 or 4-celled; ovules in cells numerous, attached to an axil or basal placenta. Fruit dry, capsular, or indehiscent; seeds in each cell many, or rarely few or only 1. Seeds small or minute, angular or subglobose, rarely peltate, very rarely winged. Herbs, rarely shrubs, never trees. Leaves mostly opposite. Stipules quite entire, dentate or setose. Examples: *Dentella*, *Pentas*, *Hedyotis*. Amongst the plants of this tribe are many weeds; others, however, produce showy flowers.

Subseries II. Fruit fleshy, bursting irregularly or dehiscing at the apex, or a drupe with 2 or many pyrenes, pyrenes polyspermous.

Tribe 7. MUSSÆNDEÆ.—Corolla-lobes valvate. Ovary 2 or many celled, and numerous ovules. Fruit indehiscent, fleshy, baccate or with 2 or many pyrenes, 2 or many celled, polyspermous. Seeds minute, globose or angular, very rarely compressed, testa often foveolate or reticulate, albumen, carnose; embryo minute, ovoideus or clavate, cotyledons very rarely broad or flat. Example: *Mussœnda.* One or more of this genus will be met with in our gardens. The genus will readily be detected by the large white or coloured leaf of the calyx.

Tribe 8. HAMELIEÆ.—Corollo-lobes imbricate or closely twisted. Ovary 2 or many celled, with numerous ovules in each cell. Fruit fleshy or coriaceous, indehiscent, baccate or of 2 or many pyrenes, cells or pyrenes polyspermous. Seeds minute, globose or angular, testa often foveolate or reticulate, albumen carnose. Embryo minute, often clavate. Examples: *Hamelia*, *Hoffmannia* (*Higginsia*). Species of these genera are common garden plants.

Tribe 9. CATESBÆEÆ.—Corolla-lobes valvate. Ovary 1 or 2 celled. Fruit fleshy or coriaceous. Seeds often agglutinated into a globose mass, compressed or turgid; testa coriaceous or membranous. Plants of the West Indies and South America. Probably no examples in Queensland.

Tribe 10. GARDENIEÆ.—Corolla-lobes contorted or imbricate. Ovary with 1 or many cells, the cells with many or few ovules. Fruit indehiscent, fleshy, baccate, 1 or many celled, cells with 1 or many seeds, endocarp sometimes bony or cretaceous. Seeds large or somewhat large, rarely small and angular, compressed or obtuse-angular; testa membranous, coriaceous, or fibro-cartilaginous, very rarely bony; albumen horny or fleshy; embryo large or somewhat large, cotyledons very often ampli-foliaceous. Examples: *Randia*, *Gardenia.* The plants of the genera mentioned are amongst the most favoured of garden shrubs.

SERIES B. Ovules 2 in each cell.

Tribe 11. CRUCKSHANKSIEÆ.—Corolla valvate. Ovary 2-celled, with 2 ovules in each. Capsule membranous, septicidally 2-valved, valves 2-partite. Chilian plants; probably none in Queensland gardens.

Tribe 12. RETINIPHYLLEÆ.—Corolla closely contorted. Ovary 5 to 7 celled, with 2 ovules in each. Drupe of 5 to 7 1-seeded pyrenes. The only example probably obtainable in Queensland will be *Scyphiphora hydrophylacea.* This is a small tree of Northern Queensland, and probably the only one that will be met with here of the tribe.

SERIES C. Ovules always solitary in each cell.

Subseries I. Radicle superior.

Tribe 13. GUETTARDEÆ.—Corolla-lobes imbricate or valvate, never twisted. Stamens inserted in the throat of the corolla. Ovary 2 or many celled; ovules solitary, anatropous (inverted), pendulous from the apex of the cell, funicle incrassated, raphe dorsal with superior micropyle. Drupe with 2 or many pyrenes, or putamen 2 or many celled, the fruit rarely 2 cocci. Seed terete pendulous from the apex of the cell, albumen scanty or none, embryo elongate, cylindrical, radicle superior. Trees or shrubs. Example: *Guettarda.* Small trees met with in Northern Queensland; probably no examples in the gardens.

Tribe 14. KNOXIEÆ.—Corolla-lobes valvate. Stamens inserted in the throat of the corolla. Ovary 2-celled; ovules solitary, anatropous, pendulous from the apex of the cell; funicle short, incrassated, or slender; raphe dorsal with superior micropyle. Fruit 2 cocci. Seed compressed, albumen copious, cotyledons compressed, radicle superior. Herbs, the stipules setose often connate in a sheath. Inflorescence terminal. Example: *Knoxia,* a small, somewhat showy plant to be met with in the pastures of both South and North Queensland.

Tribe 15. CHIOCOCCEÆ.—Corolla-lobes valvate or imbricate, never twisted. Stamens, except in two genera, inserted at the base of the corolla. Ovary 2-10-celled; ovules solitary, anatropous, pendulous from the apex of the cell; raphe dorsal with superior micropyle. Drupe with 2 pyrenes or the putamen 2-celled, or the fruit very rarely capsular. Seeds very often compressed, albumen copious, funicle natural or incrassated. Cotyledon often compressed, radicle superior. Trees or shrubs. Examples: *Chiococca, Hodgkinsonia.* This latter forms a rather handsome, small tree, and is common in South Queensland.

Tribe 16. ALBERTIEÆ.—Corolla-lobes closely contorted. Stamens inserted in the throat of the corolla. Ovary 2 or many celled; ovules solitary, anatropous or semi-anatropous, inserted at the apex or above the middle of the cell, funicle often incrassated, raphe dorsal with superior micropyle. Fruit coriaceous, 2-celled. Seeds various, albumen copious, horny or fleshy, cotyledons short or broad and compressed, radicle superior. African trees or shrubs; probably no examples in Queensland.

Tribe 17. VANGUERIEÆ.—Corolla-lobes valvate. Stamens inserted at the throat of the corolla. Ovary 2 or many celled; ovules solitary, anatropous, affixed above the middle of the cell, pendulous, raphe dorsal, micropyle superior. Drupe with 1 or many pyrenes, or putamen, 1 or many celled. Seeds various, albumen copious; cotyledons very often compressed, broad, radicle superior. Trees, shrubs with usually an axillary inflorescence. Examples: *Plectronia, Vanqueria.* The first-named genus is frequently to be met with in Queensland in the form of tall shrubs or small trees. The latter is represented by one species in our gardens. One, *V. edulis,* produces a good fruit.

Subseries II. Radicle inferior.

Tribe 18. IXOREÆ.—Corolla closely contorted (never imbricate). Stamens inserted in the mouth or throat of the corolla. Ovary 2 (rarely 3 or 4) celled; ovules in cell solitary, anatropous or amphitropous, affixed above the middle, very rarely at the base of the cell. Fruit baccate or coriaceous, 2-4-celled or 2-4 pyrenes; pyrenes coriaceous, rarely 1-celled, 1-seeded. Seeds very often plano-convex, or the ventral face exsculptured, albumen horny; embryo curved, small or middling, cotyledons flat, broad; radicle terete, inferior. Trees or shrubs, the stipules of both sides entire. Examples: *Ixora, Coffea.*

Tribe 19. MORINDEÆ.—Corolla-lobes valvate. Stamens inserted at the mouth or throat of the corolla. Ovary 2 (rarely perfect or imperfect 4) celled; ovules in cells solitary or in ovaries imperfectly 4-celled in pairs, anatropous or amphitropous, attached below the middle of the cell; raphe dorsal, micropyle inferior. Fruit baccate or drupaceous, 2 or 4 celled or with 2 or 4 pyrenes. Seeds various, umbilicus ventral or subbasal, albumen horny; embryo straight or curved, cotyledons somewhat linear; radicle terete, inferior. Trees and shrubs erect or scandent; stipules solitary on both sides, entire, rarely cut. Example: *Morinda;* known at once by their mulberry-like fruit, whence the name.

Tribe 20. COUSSAREEÆ.—Corolla-lobes valvate. Stamens inserted in the tube or throat of corolla. Ovary 1-celled (or 2-celled, the septa very thin and evanescent); ovules in pairs, basal and erect or peltately affixed at the base of the thin septa, amphitropous. Fruit coriaceous, 1-seeded. Embryo minute, radicle inferior. Shrubs; stipules entire, solitary on both sides; flowers terminal. Plants of Brazil and Tropical America; probably no examples in Queensland.

Tribe 21. PSYCHOTRIEÆ.—Corolla-lobes valvate. Stamens inserted at the throat of the corolla. Ovary 2 (rarely 4 or 8) celled; ovules solitary in the cells, wholly basal, anatropous, very often cuneate, compressed. Fruit very often of 2 pyrenes; pyrenes plano-convex, the ventral face plane, sulcate, or concave. Albumen often horny, embryo often curved, cotyledons plane or semi-terete, radicle straight or curved, inferior. Trees or shrubs, rarely herbs. Examples: *Psychotria*, *Geophila*, *Myrmecodia*, and *Hydnophytum*. The first are usually shrubs; the second is a creeping plant bearing fruit resembling the Kentish cherry in shape and colour; the two latter genera are gouty-stemmed epiphytes.

Tribe 22. PÆDERIEÆ.—Flowers hermaphrodite or polygamo-diœcious. Corolla-lobes valvate. Stamens inserted in the throat or tube of the corolla (or sometimes at the base). Ovary 2 to 5-celled; style branches (or stigmas) 2 or 5, filiform, papillous all round, rarely short and obtuse; ovules solitary in each cell, erect from the base; anatropous. Fruit globose, compressed or angular; or of 2 cocci, epicarp loose, fragile, membranous. Seeds with little or much albumen, of a fleshy character; cotyledons broad, foliaceous; radicle inferior. Climbing or erect shrubs very frequently fetid when bruised. Stipules entire, solitary on both sides. Example: *Pæderia.* Rather pretty climbing plants but the foliage when rubbed emits a most disagreeable odour.

Tribe 23. ANTHOSPERMEÆ.—Flowers often polygamo-diœcious or unisexual. Corolla valvate. Stamens inserted in the throat, tube, or often at the base of the corolla; filaments exserted; anthers elongate, versatile. Ovary 1-4-cells; style entire or style-branches often filiform, much elongated and papillous or hirsute, rarely lævis; ovules solitary in each cell, erect from the base, anatropous. Fruit of 2 pyrenes, 2 cocci, or capsular. Seeds erect, albumen copious, cotyledons very often plane, radicle inferior. Shrubs and undershrubs, rarely herbs; when bruised often fetid. Examples: *Serissa*, *Coprosma*. Examples of each are commonly to be met with in cultivation as ornamental plants—often for the variegation of their foliage.

Tribe 24. SPERMACOCEÆ.—Flowers hermaphrodite, rarely 1-sexual. Corolla-lobes valvate. Ovary 2 (very rarely 3-4) celled; style entire, stigmas capitellate or bifid, rarely 2 or 3-4 elongate style branches; ovules solitary in each cell, attached to the septa, amphitropous. Fruit dry, indehiscent or dehiscent, 2-cocci or capsular, sometimes circumscissile. Seeds oblong or linear, the hilum ventral, often elongate, very often longitudinally exsculptured on the ventral face, albumen horny or fleshy; embryo various, radicle inferior. Herbs, rarely undershrubs; stipules setose, very rarely entire. The flowers small and inconspicuous. Examples: *Spermacoce, Richardsonia;* generally weedy plants.

Tribe 25. GALIEÆ.—Flowers usually hermaphrodite. Corolla valvate. Ovary 2-celled; style very often short, branches 2, apex stigmatose or capitellate; ovules solitary in the cells, amphitropous, anatropous, or semi-anatropous, funicle attached to the base of septa. Fruit coriaceous or fleshy, very often didymous, indehiscent. Seeds peltate, the ventral face often concave; hilum broad, albumen horny, embryo curved, radicle inferior. Herbs, rarely undershrubs, the branches 4-angular. Leaves verticillate; stipules similar to the leaves, then said to be exstipulate, rarely opposite. Examples: *Rubia, Galium, Asperula;* often rough weedy plants. From the first genus the well-known dye, Madder, is obtained.

TRIBE XVIII. IXOREÆ.

COFFEA, Linn.

The Arabic name of the plant is Qahoueh; and of this word, the Persian Cahwa, the Turkish Cahvey, the French Café, and our Coffee, are evidently corruptions. Others, however, give the following as its derivation:—Caffee, a province of Narea in Africa, where the common coffee grew in abundance.

Calyx-tube short, campanulate, turbinate or urceolate; limb small or obsolete, cleft or obscurely toothed, persistent, not accrescent. Corolla salver or somewhat funnel-shaped, membranous or slightly coriaceous; tube short or elongated; throat glabrous; limb spreading, 5 to 7-partite, rarely 4 or 8-partite; lobes contorted dextrorsely (as seen from inside) in æstivation. Stamens 5 to 7, rarely 4 or 8, inserted at the mouth of the corolla, exserted or partly included, glabrous; filaments short or obsolete, or even two-thirds of the length of the anthers; anthers linear, fixed at the back above the base. Disk fleshy, glabrous. Ovary 2-celled; style filiform, glabrous, usually shortly exserted, bifid; lobes linear, spathulate or tapering; ovules solitary, subpeltately attached about the middle of the ovary or rather lower, amphitropous. Berry ellipsoidal, oblong, or subglobose, more or less fleshy; pyrenes 2 (one sometimes abortive), papery or coriaceous, convex on the back, flat with a narrow usually deep longitudinal furrow on the face. Seeds plano-convex; umbilicus ventral; testa membranous, intruded within the furrow of the face; embryo somewhat curved; cotyledons foliaceous; radicle subterete, inferior, longer than the cotyledons; albumen horny. Shrubs or small trees with opposite branches and leaves. Leaves ovate or lanceolate, apiculate intrapetiolar stipules, axillary or terminal solitary or clustered white fragrant hermaphrodite flowers, and bracteoles usually connate into a single or double cup at the base of the calyx or on the short pedicel or peduncle.

C. arabica, *Linn.* The Coffee. A glabrous glossy shrub or small tree. Branches terete, or at the extremities rather compressed. Leaves oval, or elliptical, acuminate, wedge-shaped at the base, subcoriaceous, evergreen (usually persisting for three years), somewhat undulate, 3 to 8 by 1¼ to 3 inches; lateral veins, 7 to 12 pairs; margins rather undulate; petiole 2 to 6 lines long; stipules broadly ovate, apiculate, connate at the base, 2 to 4 lines long. Flowers fragrant, ½ to ¾ inch long just before expansion, about half as long after expansion, subsessile or very shortly pedicellate, 2 to 9 or more together in very short axillary or lateral bracteolate clusters: bracteoles ovate, the inner ones connate at the base of the pedicels, falling short of the shallow subtruncate or obtusely 5-denticulate calyx limb. Corolla white; lobes oval, obtuse, or mucronulate, equalling or exceeding the tube, spreading. Anthers rather shorter than the corolla-lobes, wholly exserted, fixed rather below the middle to the filament, which are about half as long. Disk glabrous. Style about equalling the unexpanded flower, bifid; lobes linear, narrower towards the tip. Berry ellipsoidal, ½ inch or more long, red when ripe. Seeds from 4 to 6 lines long.

Order COMPOSITÆ.

This is the most extensive family amongst flowering plants, number of species 10,000 in 800 genera, and represented in every quarter of the globe and in every variety of station.

Flowers or *florets* collected together in a head (rarely reduced to a single floret), surrounded by an involucre of several bracts, either in one row or imbricated in several rows, the whole having the appearance of a single flower. Receptacle on which the florets are inserted either naked or bearing chaffy scales or hairs or bristles between the florets. In each floret the calyx is wanting or converted into a *pappus* or ring of hairs or scales on the top of the ovary. Corollas either all hermaphrodite, tubular, and 5 or rarely 4-toothed (heads discoid) or all hermaphrodite and *ligulate*, that is, with a slender tube and a flat strap-shaped lamina, or those of the centre or *disk* tubular and hermaphrodite or male, and those of the circumference either ligulate and female or neuter, forming a *ray* (heads *radiate*), or filiform and female (heads *discoid* but heterogamous). Stamens, 5 rarely 4, inserted in the tube of the corolla, the anthers linear and united in a sheath round the style (except in *Xanthium* or where more or less imperfect), 2-celled, opening inwards by longitudinal slits, the connective usually produced at the top into a small erect appendage, the anther obtuse or sagittate at the base, the basal lobes sometimes prolonged into short and acute or long very fine and hair-like points or lobes called *tails*. Ovary inferior, with a single erect ovule. Style filiform, usually divided at the top into 2 short stigmatic branches. Fruit a small, dry seed-like nut or *achene*, crowned by the pappus or naked. Seed erect, without albumen. Embryo straight or rarely curved. Radicle inferior. Herbs, shrubs, or very rarely small trees, with alternate or opposite leaves without stipules. Flower-heads terminal or very rarely axillary, solitary or in panicles, usually corymbose, sometimes reduced to clusters or compound heads, the general inflorescence often centrifugal, the inflorescence within the head always centripetal.

[Considering the vast number of species contained in this order, it will be found divided into but few tribes. These, however, are again divided into subtribes. To have given the characters of all these subdivisions would have too far extended the work. The subtribes from which examples are taken are, however, noted, and their leading features stated.]

Tribe 1. VERNONIACEÆ.—Flower-heads homogamous, tubular; anthers sagittate at the base; style-branches subulate, hairy; leaves very often alternate; corolla never yellow; pappus often setose or paleaceous.

* Subtribe *Euvernonieæ.* — Heads distinct, many flowered. Examples: *Centratherum*, *Vernonia.* The examples obtainable not of much beauty. The first will be found on the border of scrub, the latter amongst grass in open pastures; the flowers of both are of a bluish purple.

Tribe 2. EUPATORIACEÆ.—Flower-heads homogamous, tubular; anthers subentire at the base; style-branches subterete, obtuse, and shortly papillous. Leaves opposite or alternate. Corolla usually orange, rarely yellow or yellowish; pappus often setose.

Subtribe *Piguerieæ.*—Anther-tip truncate. Example: *Adenostemma.*

Subtribe *Agerateæ.*—Anther-tip appendiculate; achenes 5-angled. Examples: *Ageratum*, *Eupatorium.*

Of the genera mentioned the first will be found on very wet land; the second is known as "Billy-goat weed," and has overrun both garden and field; the last will be found in garden culture, and possessing more or less beauty and supposed medicinal virtues.

Tribe 3. ASTEROIDEÆ.—Flower-heads homogamous, radiate or disciform or wanting rays and homogamous; anthers obtuse at base or subentire; style-branches complanate, appendiculate (except in *Baccharideæ*); leaves most frequently alternate; receptacle most frequently naked; corollas of the disk most frequently yellow, rays of same colour, or various colours.

Subtribe *Bellideæ.*—Ray-flowers female, ligulate, never yellow; disk flowers yellow; pappus none or very short. Examples: *Lagenophora*, *Brachycome*, Brisbane Daisy; *Bellis*, English Daisy.

Subtribe *Heterochromeæ.* — Ray-flower female, ligulate, never yellow; disk flowers yellow; pappus hairs long, copious. Examples: *Calotis*, nasty burrs; *Olearia*, often handsome shrubs.

Tribe 4. INULOIDEÆ.—Flower-heads heterogamous disciformis or radiate, or wanting rays and homogamous. Anthers setiferous or caudate at the base. Style-branches linear, obtuse, inappendiculate, or styles of the sterile flowers undivided. Leaves usually alternate. Disk and ray-flowers usually both yellow.

Subtribe *Plucheineæ.*—Heads androgynous. Involucral bracts dry or herbaceous, rarely subscarious. Receptacle naked. Style-arms of the hermaphrodite flowers filiform, not truncate, or style of sterile flowers entire. Example: *Blumea*, *Epaltes*, *Pterocaulon.* More or less weedy plants, seldom of much beauty; this is especially the case with those species of which examples will be obtainable.

Subtribe *Gnaphalieæ.*—Heads androgynous or homogamous. Involucral bracts scarious, usually hyaline, or the inner radiating. Receptacle usually naked. Style-arms of the hermaphrodite flowers truncate. Examples: *Gnaphalium*, *Helichrysum*, or the Everlasting Flowers. *Immortelle* of the French belong to this genus and its near allies.

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* Some but not all the subtribes of this Order are given.

Tribe 5. HELIANTHOIDEÆ.—Flower-heads heterogamous, radiate, or disciformis, or wanting rays and homogamous. Receptacle paleaceous, or rarely naked in the centre. Anthers ecaudate, or with two very short points at the base. Style-branches with the apex truncate or appendiculate, or style of the sterile flowers entire. Achenes 3-4-angled, or terete, or compressed. Pappus of 2-4 bristles, or paleaceous, or none.

Subtribe *Ambrosieæ.*—Heads heterogamous or unisexual. Flowers hermaphrodite, sterile, with undivided styles; female apetalous. Anthers nearly free, with inflexed appendages. Examples: *Ambrosia*, *Xanthium.* Both genera introduced weeds; the latter includes the Bathurst and Noogoora burrs.

Subtribe *Zinnieæ.*—Head radiate; ligula of achene sessile or subsessile, persistent. Receptacle paleaceous. Example: *Zinnia*, a well-known garden annual.

Subtribe *Verbesineæ.*—Heads hetero or homogamous. Flowers hermaphrodite, all fertile. Achenes of the disk anguled, subterete, or laterally compressed, crowned with 2-3 bristles or scales or naked. Leaves usually opposite. Examples: *Siegesbeckia*, *Eclipta*, *Helianthus*, or Sunflower.

Subtribe *Coreopsideæ.*—Heads hetero or homogamous. Flowers hermaphrodite, all fertile or neuter. Achenes dorsally compressed. 2-4 awned or naked. Examples: *Coreopsis*, *Dahlia*, *Cosmos*, all well-known garden plants.

Subtribe *Galinsogeæ.*—Heads hetero or homogamous. Flowers hermaphrodite, all fertile. Achenes with short bristle-like paleæ. Example: *Galinsoga*, an introduced and troublesome annual weed, at once recognized by its 5 (usually) small white ligulate florets.

Tribe 6. HELENIOIDEÆ.—Flower-heads heterogamous radiate, or rarely disciformis or wanting rays and homogamous. Receptacle naked. Anthers without tails. Styles of the hermaphrodite flowers with the branches truncate or appendiculate. Achenes narrow or turbinate, 4-5 angled or with 8 or many ribs, and crowned with paleæ, rarely awns or setæ, rarely bald. Leaves opposite or alternate. Involucre bracts 1-2 seriate or rarely 3-4 seriate, herbaceous or membranous. Corolla-disk usually yellow, rays of the same colour or various.

Subtribe *Tagetineæ.*—Involucral bracts 1-seriate, equal, sprinkled with oil-glands. Achenes narrow and much striated. Pappus paleaceous, aristose, setose or rarely none. Example: *Tagetes;* one species known as the French Marigold.

Subtribe *Euhelenieæ.*—Involucre often with broad bracts, of 2 or few series, subequal or imbricate. Achenes turbinate or oblong, silky villose. Example: *Gaillardia*, a showy genus often cultivated for the sake of its flowers.

Tribe 7. ANTHEMIDEÆ.—Flower-heads heterogamous radiate or disciformis, or wanting rays and homogamous. Involucral bracts 2 or many seriate, dry or scarious at the tips. Receptacle paleaceous or naked. Anthers without tails. Style-branches truncate at the apex. Pappus none or a crown of short paleæ. Leaves most frequently alternate. Disk-flowers yellow, ray-flowers variously coloured. Examples: *Chrysanthemum*, *Centipeda*, *Tanacetum.* The first genus is well known; the second is composed of weedy plants which have some medicinal reputation; the latter contains the well-known Tansy.

Tribe 8. SENECIONIDEÆ.—Flower-heads heterogamous radiate or disciformis, or wanting rays and homogamous. Involucral bracts usually 1-seriate and subequal, with a few short outer ones at their base, rarely many-seriate. Receptacle often naked. Anthers tailless or with 2 short points at the base. Style-branches of hermaphrodite flowers often penicillate, truncate or appendiculate. Achenes various. Pappus of fine hairs, rarely bald. Leaves alternate or rarely opposite. Corolla of disk yellow, rays also usually yellow but various.

Subtribe *Eusenecioneæ.*—Involucral bracts 1-2-seriate, free nearly to the base, usually with a few smaller outer ones. Style-branches of the hermaphrodite flowers truncate or obtuse, penicillate or with hairy tips. Examples: *Gynura*, *Cineraria*, *Senecio.* This subtribe, it will be seen, is composed of some of the most beautiful plants in cultivation, while others are most troublesome weeds.

Tribe 9. CALENDULACEÆ.—Flower-heads heterogamous, radiate. Involucral bracts 1-2-seriate, narrow, subequal. Receptacle naked. Anthers with a mucronate-subcaudate base. Style-branches of the hermaphrodite flowers truncate, in the sterile flowers undivided. Achenes (often heteromorphous or thick) bald or rarely crowned with a little woolly tomentum. Leaves usually alternate or radical. Example: *Calendula.* The genus quoted contains the common pot Marigold.

Tribe 10. ARCTOTIDEÆ.—Flower-heads radiate or wanting rays and homogamous. Involucral bracts many-seriate, imbricate, points sometimes broad and scarious, sometimes very acute or spinescent. Anthers with an entire or sagittate base, the auricles obtuse or acute, never tailed. Style-branches of the fertile hermaphrodite flowers sometimes somewhat broad with rounded points, often united high up, or the sterile styles undivided. Achenes often thick, bald, or pappus paleaceous or coroniformis. Leaves radical or alternate.

Subtribe *Euarctoteæ.*—Heads distinct. Involucral bracts free, and at least the interior one with broad scarious points. Examples: *Cymbonotus Cryptostemma.* The genera brought under notice are weedy plants, the first indigenous to our Darling Downs; the latter is the African plant known as Cape-weed.

Subtribe *Gorterieæ.*—Heads distinct. Involucral bracts joined at the base, the points acute, very acute or spinescent, or rarely foliaceous. Example: *Gazania*, a very handsome genus of border plants.

Tribe 11. CYNAROIDEÆ.—Flower-heads tubular. Involucral bracts many-seriate, imbricate, with scarious, spinous, or foliaceous tips. Receptacle often fleshy, densely bristly or paleaceous, rarely simply pitted. Corolla-limb slender, deeply 5-fid. Anthers tailed. Styles subentire, or the branches short-hairy, or thickened towards the base. Achenes often hard. Pappus various, rarely none. Leaves alternate, often spinous.

Subtribe *Cardnineæ.*—Heads many-flowered, separate. Achenes glabrous, basal areole horizontal. Pappus-hairs distinct or connate. Examples: *Carduus*, Spear thistle; *Cynara*, Artichoke; *Silybum*, Virgin Mary's thistle.

Subtribe *Centaureeæ.*—Heads separate, many-flowered. Achenes glabrous, basal areole oblique or lateral. Example: *Centaurea* (see Bluebottle, and others).

Tribe 12. MUTISIACEÆ.—Flower-heads hetero or homogamous, rayed or not. Involucral bracts many-seriate, unarmed. Receptacle rarely paleaceous. Corolla bilabiate, or the limb deeply 5-fid. Anthers usually caudate. Style-branches (very short or elongated), with rounded or truncate inappendiculate points. Achenes various. Pappus setose, paleaceous, or rarely none. Leaves radical or alternate, rarely opposite.

Subtribe *Barnadesieæ.*—Heads æqualiflorus or radiatiformis. Anthers tailless. Style-branches very short, connivent or scarcely patent. Involucral bracts many-seriate, imbricate. Example: *Barnadesia*, a South American genus. The only example to be met with in Queensland is a large rambling spiny bush. One plant is in the Brisbane Botanic Gardens, but is cut down every year so never flowers; the other is between the Beenleigh school and teacher's residence.

Subtribe *Gochnatieæ.*—Heads æqualiflorus, corolla tubulose, limb-segments narrow, equal or obscurely 2-lipped. Involucral bracts many-seriate, imbricate. Example: *Stifftia chrysantha.* Plant in Brisbane Botanic Gardens, a native of Brazil.

Tribe 13. CICHORIACEÆ.—Flower-heads homogamous, æqualiflorus or subradiatiformis. Involucre various. Receptacle epaleaceous or paleæ deciduous. Corollas all ligulate; ligule truncate, 5-toothed at apex. Anthers tailless or shortly setiferous at the base. Style-branches slender. Achenes various. Pappus setose, paleaceous, or none. Leaves radical or alternate. Herbs, with usually a milky juice.

Subtribe *Hyoserideæ.*—Achenes truncate. Pappus of scales, with sometimes alternating hairs or none. Example: *Cichorium.* The Endive and Chicory are plants of this genus.

Subtribe *Crepideæ.*—Usually leafy herbs, not woolly nor with stellate hairs. Involucre calyculate, inner bracts often thickened. Achenes usually contracted at both ends. Examples: *Picris*, *Crepis.* All or mostly composed of weedy plants; the first-named genus of a very harsh nature.

Subtribe *Hypochærideæ.*—Scapigerous herbs, hairs various. Achenes contracted below, usually beaked above. Pappus-hairs simple or feathery. Examples: *Hypochæris*, *Taraxacum Dens-leonis,* the Dandelion.

Subtribe *Lactuceæ.*—Herbs, rarely shrubby below, glabrous or hispid, rarely scapigerous. Achenes usually narrowed below, and beaked or not above. Pappus-hairs many, simple. Examples: *Lactuca*, *Sonchus.* The first genus contains the Lettuce, and the latter the Sow thistle.

Subtribe *Scorzonereæ.*—Herbs, glabrous, woolly or hispid. Achenes with a broad base, or curved hollow stipes, above narrowed or beaked. Examples: *Tragopogon porrifolius*, the Salsafy; *Scorzonera*, the Viper's Grass, *S. hispanica*, supposed to possess the power of curing the bites of vipers.

TRIBE V. HELIANTHOIDEÆ.—SUBTRIBE AMBROSIEÆ.

XANTHIUM, Linn.

(From *xanthos*, yellow; the plants being formerly used by the Greeks to dye their hair.)

Capitula unisexual, monœcious; staminate globose, in terminal clusters; pistillate 2-flowered, chiefly axillary. Male capitula with few narrow involucral bracts; florets numerous, sheathed by folded hyaline paleæ; corolla 5-toothed; anthers free or nearly so, base obtuse. Female capitula with an ellipsoidal or ovoid closed gamophyllous aculeate involucre, 2-locellate and 2-rostrate; corolla none; achenes solitary in each cell of the indurated prickly enclosing involucre. Coarse scabrid hoary or glabrate annuals, with alternate petiolate palmately-lobed leaves.

X. strumarium, *Linn.* Noogoora Burr. Stem, branches, and leaves puberulous without spines, mottled, spreading, attaining 6 or 8 feet in height. Leaves deltoid, 3 to 5-lobed, unequally often coarsely dentate, often over 6 inches broad; base 3-nerved, cordate, sinus wide, cuneate into the petiole of 1 to 6 inches. Capitula nearly sessile, clustered; fruit ellipsoidal, about ¾ inch long, terminating in an erect or somewhat curved beak.

Order PROTEACEÆ.

This order contains about 960 species in a genera of between 50 and 60. The most important product of the order is its timber; many of the woods are very beautiful, and some are in demand, principally by coopers and cabinetmakers.

Flowers hermaphrodite or rarely partially unisexual. Perianth regular or irregular, deciduous, consisting of 4 segments valvately united in the bud, the claws forming a tube cylindrical ordilated towards the base, the laminæ short, forming a globular ovoid or rarely elongated limb; the segments at length separating either from the base upwards or revolute from the laminæ downwards, leaving a portion of the tube entire or open on one side, the laminæ sometimes cohering long after the segments have separated lower down. Stamens 4, opposite the perianth segments and usually inserted on them, either with the filaments wholly adnate, leaving the anthers sessile at the base of the laminæ, or the filament shortly free below the laminæ; or very rarely the stamens entirely free from the perianth. Anthers various, all perfect or rarely partially abortive, most frequently with 2 parallel cells adnate to a connectivum continuous with the filament. Hypogynous or perigynous glands or scales in many genera 4, alternating with the stamens, but in some genera variously united or reduced in number or wholly deficient. Ovary 1-celled, sessile or stipitate, more or less excentrical, with a single terminal undivided style, variously shaped at the end, with a small terminal oblique or lateral stigma. Ovules either solitary or 2 collaterally attached or slightly superposed, or several imbricate in 2 contiguous rows, either pendulous and orthotropous or, more frequently, laterally attached and more or less amphitropous, rarely erect and anatropous, the micropyle always inferior and frequently prominent from the incomplete development of the primine. Fruit either an indehiscent nut or drupe, or a more or less dehiscent coriaceous or woody folicle, very rarely a completely 2-valved capsule; either 1-celled and 1-seeded, or when 2 seeds are ripened in a drupe sometimes really 2-celled from the growth of the endocarp between as well as round the seeds, or when 2 or more seeds ripen in a follicle apparently 2 or more celled by the consolidation of the external coating of the two adjoining seeds into a membranous or woody plate detaching itself from the remainder of the seed. Seeds without albumen, the testa usually thin, rarely coriaceous or hard;. embryo straight, with fleshy cotyledons and a short inferior radicle. Shrubs or trees, rarely undershrubs or even perennial herbs. Leaves alternate or scattered, in a very few genera strictly opposite or verticillate, but often crowded under the inflorescence so as to appear verticillate, usually coriaceous, often vertical with stomata on both sides, or in the same genera horizontal or narrow and terete, entire, toothed, or variously divided, without stipules. Flowers axillary or terminal, solitary or in racemes or spikes, often condensed into umbels, heads, or cones, each flower or pair of flowers subtended by a bract, very deciduous in some genera and perhaps sometimes really deficient, the pedicels always with bracteoles.

SERIES I. NUCAMENTACEÆ.

Fruit an indehiscent nut or drupe. Flowers usually solitary within each bract.

Tribe 1. PROTEEÆ.—Anthers all perfect, or very rarely the upper one abortive, with 2 parallel cells adnate to the connectivum, inserted at the base of the short spreading laminæ of the perianth. Ovule 1 or rarely 2. Stigma terminal. Fruit a dry nut. Examples: *Protea*, *Petrophila*. The first genius belongs to South Africa, and the honey of the flowers is collected by the farmers, who prepare from it, by inspissation, a delicious syrup, which is known as the "Syrupus Proteæ." These South African plants do not, as a rule, thrive well in Queensland, but some may be seen growing at Bowen Park. Specimens of the latter genus may be obtained on the islands of our coast and at Stanthorpe, &c.

Tribe 2. CONOSPERMEÆ.—Anthers: One with 2 perfect cells, two with 1 perfect and 1 abortive cell, the fourth abortive, the perfect cell broad, concave, erect, without any connective, the adjoining ones of distinct anthers applied face to face in the bud, forming a single cell, all on very short thick filaments at the base of the laminæ, or at the summit of the tube of the perianth. Ovule 1. Fruit a dry nut. Example: *Conospermum*. Specimens of *C. taxifolium* may be obtained usually on sandy land.

Tribe 3. FRANKLANDIEÆ.—Anthers all perfect, with parallel adnate cells enclosed in and adnate to the slender perianth tube. Ovule 1. Fruit a dry nut with a pappus-like cone. Example: The single genus of West Australian plants, *Franklandia*.

Tribe 4. PERSOONIEÆ.—Anthers all perfect, with parallel cells adnate to the connective, the stamens inserted at or below the middle of the perianth-segments. Ovules 2, or sometimes 1. Fruit a drupe, or rarely a dry nut or membranous. Example: *Persoonia*. Several species are in Queensland, and pretty generally known as "Geebong." At the Mitchell River the natives call the fruit "Nanchee" and "Booral," other natives call them "Koombarra."

SERIES II. FOLLICULARES.

Fruit dehiscent, follicular or 2-valved, rarely (in *Helicia*, and *Macadamia*) drupaceous and indehiscent. Flowers usually in pairs, with a single bract to each pair, rarely (in *Carnarvonia*, *Lambertia*, and *Stenocarpus*) the inflorescence anomalous.

Tribe 5. GREVILLEEÆ.—Ovules 2 or 4, collateral. Seeds without any intervening substance or separated by a thin lamina or mealy substance. Flowers in racemes or clusters, with deciduous or abortive bracts, or with an involucre of imbricate bracts. Examples: *Macadamia ternifolia*, the Queensland Nut; *Grevillea robusta*, the Silky Oak.

Tribe 6. EMBOTHRIEÆ.—Ovules several, imbricate in 2 rows. Seeds usually separated by thin laminæ or a mealy substance. Examples: *Stenocarpus sinuatus*, the so-called Tulip-flower; and the white-flowered Protead, so frequently met with in flower on sandy land, *Lomatia silaifolia*.

Tribe 7. BANKSIEÆ.—Ovules 2, collateral. Seeds separated either by a hard usually woody substance, or by a membrane rarely wanting. Flowers in dense cones or heads. Examples: *Banksia*, any species generally known as Honeysuckle trees.

TRIBE VII. BANKSIEÆ.

BANKSIA, Linn. f.

[I was led to choose this genus of *Proteaceæ* to illustrate the mode of describing genera and species, first, on account of its being one of the very few plants named by the younger Linnæus, second, because it bears the name of one, Sir Joseph Banks, who did much to make known the plants of this part of Australia.]

Flowers hermaphrodite. Perianth regular or nearly so, straight or curved, the slender tube opening equally or along the lower side only, the limb ovoid-oblong or linear, the laminæ remaining long coherent, or rarely separating as the tube opens. Anthers narrow, sessile in the concave laminæ, the connective thick, usually very shortly produced beyond the cells. Hypogynous scales 4, very thin and membranous (rarely dificient?). Ovary very small and sessile; style usually longer than the perianth, rigid, curved, and protruding from the slit in the perianth-tube until the end is set free by the separation of the laminæ, and then either straightened or remaining hooked or curved, rarely straight from the first, and not exceeding the perianth; the stigmatic end on a level with the anthers, of a different texture but smooth, or striate and furrowed, continuous with the style or with a prominent rim at the base, the real stigma small and terminal; ovules 2, collaterally attached above the middle. Fruit a compressed capsule, opening at the broad end (or rather outer margin, for the scar of the style is lateral) in 2 hard often woody horizontal valves. Seeds usually 2, compressed, with a terminal membranous wing broad and rounded like the valves, the seeds separated by a plate of the same shape (the consolidated outer integuments of the inner side of the 2 seeds), free from the ripe seeds, simple (completely consolidated) between the nuclei, double (remaining distinct) between the wings. Trees or shrubs. Leaves alternate or rarely verticillate or nearly so, usually narrow, entire toothed, pinnatifid or pinnate, with numerous (rarely few) short lobes or segments, the primary veins numerous and transverse, rarely inconspicuous or irregular, and the minute reticulations numerous on the under surface, with a minute tomentum rarely wanting in the areolæ, and sometimes white, and covering the whole under surface, the upper surface almost always glabrous and smooth Flowers sessile in pairs, in dense terminal cylindrical oblong or globular spikes, either terminal and sessile above the last leaves or rarely lateral, or on short lateral branches; each pair of flowers subtended by 1 bract and 2 lateral rather smaller bracteoles, both bracts and bracteoles densely woolly-villous on both sides, the tips glabrous tormentose or villous, either clavate and obtuse or truncate, or shortly acuminate, always densely imbricate in parallel spiral or rarely vertical lines. Perianth tube very slender and entire within the bracts, ultimately splitting beyond them. In fruit the bracts and bracteoles become consolidated with the rhachis into a thick woody cone, either covered with the withered remains of the perianths amongst which the capsules are entirely concealed, or, where the flowers are wholly deciduous, the valves of the capsules protrude more or less beyond the bracts, the lower indehiscent portion containing the nuclei of the seeds remaining imbedded among the bracts. The proportion of perfect capsules is usually very small in relation to the number of flowers, of which there are often from 500 to above 1,000 in the spike.

B. integrifolia, *Linn. f.* The Common Honeysuckle tree. A tree attaining sometimes a considerable size, the young branches closely tomentose. Leaves scattered, sometimes irregularly verticillate, oblong cuneate or lanceolate, quite entire or irregularly toothed, tapering into a short petiole, 3 to 4 inches long in some specimens, twice that length in others, especially the Northern ones, ½ to near 1 inch broad, white underneath, with numerous transverse veins and reticulations not very prominent; the young shoots are also sometimes tomentose or villous with richly coloured fulvous almost woolly hairs persisting on the underside till the leaves are nearly full-grown. Spikes oblong or cylindrical, 3 to 6 inches long. Bracts tomentose at the end. Perianth usually about 1 inch long, silky. Style straightening after the perianth-laminæ have separated, and usually very spreading or reflexed. Fruiting-cone oblong, cylindrical, the capsules prominent and not thick as in some other species.

B. integrifolia, var. paludosa. Flowers smaller, the perianths about 7 or 8 lines long. This variety is usually met with on sandy land which is of a swampy nature; it forms a spreading shrub or small stunted tree with smaller leaves than those of the normal form.

Order EUPHORBIACEÆ.

Amongst Dicotyledons this order stands fourth in point of number. It contains about 3,000 species, in 200 genera.

Flowers always unisexual. Perianth either simple and calyx-like, or almost petal-like, usually small or double, with 4 or 5 petals alternating with the calyx-lobes, or sometimes entirely wanting in one or both sexes. Stamens various. Ovary superior, consisting of 3 or sometimes 2, or more than 3, united or 1-celled, or rarely 2-celled carpels, very rarely reduced to a single one. Styles as many as carpels, free or more or less united, entire or divided, the stigmatic surface usually lining their inner face. Ovules, 1 or 2 in each carpel, pendulous from the inner angle of the cells, the funicle usually thickened into a cellular mass often termed an *obturator*. Fruit either capsular, separating into as many 2-valved cocci as carpels, leaving a persistent axis, or more rarely succulent and indehiscent with the endocarp, consisting of as many indehiscent nuts or cocci as carpels or cells. Seeds laterally attached at or above the middle with or without an arillus or caruncle, embyro straight, with flat cotyledons and a superior radicle, in a fleshy albumen, or very rarely the cotyledons fleshy, with little or no albumen. Trees, shrubs, or herbs, often abounding in milky juice, exceedingly various in habits. Leaves alternate or opposite, rarely divided or compound, usually with stipules. Inflorescence very varied. Flowers usually small.

Tribe 1.* EUPHORBIEÆ.—Involucre calyx-like, including several male flowers, each of a single stamen without any perianth, and 1 central female one, a single pedicellate pistil without any or rarely with a perianth, the whole flower-head resembling a single flower. Ovary 3-celled, 1 ovule in each. Capsule 3-cocci. Seeds albuminous. Embryo with broad cotyledons and a narrow radicle. Examples: *Pedilanthus tithymaloides;* the Slipper-flower, *Euphorbia,* a common fleshy-stemmed garden plant with red slipper-shaped flowers. (See also any of the *Euphorbias,* particularly *E.* (*Poinsettia*) *pulcherrima.*)

Tribe 2. STENOLOBEÆ.—Flowers distinct, both sexes with a perianth. Ovules 1 or 2 in each cell of the ovary. Embryo linear, the cotyledons not at all or scarcely broader than the radicle. Shrubs often heath-like, with entire coriaceous leaves, or rarely herbs with small membranous leaves. Example: The little weed, *Poranthera microphylla,* will be found always ready to hand.

Tribe 3. BUXEÆ.—Flowers monœcious. Sepals imbricate or none. Petals none. Stamens opposite the sepals, or numerous. Female flowers 4 or 6. Ovary 2 or 3-celled, with two ovules in each. Raphe of ovule dorsal. Style undivided. Cotyledons various, Example: See the Garden Box, *Buxus sempervirens.*

Tribe 4. PHYLLANTHEÆ.—Flowers distinct, both sexes with a perianth. Embryo with broad cotyledons and a narrow radicle. Trees, shrubs, herbs, or annuals, the flowers small in axillary clusters, solitary, or in catkin-like spikes or racemes. Ovules 2 in each cell. Examples: Take any of the numerous *Phyllanthus,* or *Petalostigma quadriloculare,* the Emu Apple or Bitter-bark; native name, "Muntenpin."

Tribe 5. GALEARIEÆ.—Perianth double, of calyx and corolla. Stamens 4 to 10; filaments free. Ovary 1 to 3-celled, with 1 ovule in each. Fruit a small drupe. Probably no examples obtainable in Queensland.

Tribe 6. CROTONEÆ.—Flowers distinct, both sexes with a perianth, sometimes minute in the males. Embryo with broad cotyledons, and a narrow radicle. Ovules 1 in each cell. Flowers, at least males, in spikes, racemes, or panicles. Stamens usually indefinite. Examples: *Jatropha, Croton, Codiæum* (the Crotons of our gardens), *Manihot,* and *Ricinus communis,* the Castor Oil plant.

TRIBE VI. CROTONEÆ.

RICINUS, *Linn.*

(From *ricinus* a tick ; resemblance in the seeds.)

Flowers monœcious, apetalous ; calyx 5-partite, finally valvate. Stamens in male flower numerous, inserted on rather convex receptacle ; filaments numerous, ramified, many times divided above ; anthers small, 2-dymo-globose ; cells laterally or extrorsely rimose, longitudinally adnate to thin connective. Ovary (none in the male flowers) 3-locular, subsessile, style-branches 3, afterwards beyond middle 2 partite, within and on all sides much papillose, stigmatiferous (red). Ovules in cells solitary descendent ; micropyle extrorse superior ; obturator thick subhemispherical. Capsule 3-locular ; exocarp finally solute, externally smooth or echinate ; cocci solute from axis. Seeds smooth (more or less spotted), aril of exostome depressed, conical, obscurely 2-lobed ; cotyledons of large embryo-foliaceous, subelliptical, equal in breadth to albumen. Arborescent or tall herbaceous plants ; leaves alternate stipulate ; petiole long at ventral line, bearing glanduliform tubercles ; limb wide, usually peltate ; palmatinerved, 7 to 15-lobed, unequally dentate ; flowers in terminal, contracto-ramified, cymiferous racemes ; female superior ; inferior male, 1-bracteate and 2-bracteolate ; pedicel articulate.

R. communis, *Linn.* The common Castor Oil plant. The only species with numerous varieties. An evergreen shrub or small tree. Shoots and panicles glaucous. Leaves green or reddish 1 to 2 feet diam., membranous, lobes from oblong to linear acute or acuminate, gland-serrated, petiole 4 to 12 inches. Racemes stout, erect. Male flowers ½ inch in diameter ; female calyx nearly as long ; styles often highly coloured. Capsule ½ inch to 1 inch long, globosely oblong, smooth or echinate. Seed oblong, smooth, mottled.

Order GRAMINEÆ.

This was long considered to be the largest Order amongst Monocotyledons ; it is now found, however, that the Orchids* far outnumber it in species, although not in individuals, for grasses abound and cover a large portion of the earth's surface, and in importance to man no family of plant stands higher.

Flowers hermaphrodite or unisexual, in little green or more or less scarious spikes called *spikelets*, consisting of several scale-like distichous bracts called *glumes*, the 2 or sometimes 1 or rarely 3 or more lower ones and sometimes 1 or more upper ones empty, the other one or more with a sessile flower in the axil of each. No normal perianth, but the flower usually enclosed in a 2-nerved glume-like scale called a *palea* (supposed to represent the 2 bracteoles of *Hypolytreæ* or the perigynium of Craiceæ), and the perianth probably represented by 2 or rarely 3 small usually very thin and hyaline scales called *lodicules*, the palea or the lodicules or both deficient in a few genera. Stamens usually 3, occasionally reduced to 2 or 1, in a few genera 6 or more ; filaments free, filiform ; anthers usually exserted from the spikelet, versatile, ovate-oblong or linear, with 2 parallel cells opening longitudinally without any prominent connective. Ovary entire,

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* Number of species respectively—Orchids, between 4,000 and 5,000 ; Gramineæ, between 3,000 and 4,000.

1-celled, with 1 erect anatropous ovule. Styles 2 or rarely 3, free or united at the base into a 2 or 3-branched style, the upper stigmatic portion or *stigmas* usually long, either feathery with simple or branched stigmatic hairs, or more rarely simple with the stigmatic hairs very short or reduced to scarcely prominent papillæ. Fruit a small seed-like nut or utricle, often enclosed in the palea and subtending glume, the thin membranous pericarp usually closely adnate to the seed and inseparable from it, sometimes adnate also to the enclosing palea, in a few genera free and loosely surrounding the seed. Seed erect, albuminous, with a thin adnate testa. Embryo small, usually globular or nearly so, on one side of the base of the albumen. Herbs, usually tufted or decumbent or creeping and rooting at the base, sometimes tall and branching, shrubby or arborescent. Stems usually hollow between the nodes. Leaves alternate, entire, parallel-veined, usually long and narrow, sheathing the stem at their base, but the sheaths split open from the base opposite the blade and often ending within the blade in a scarious or ciliate appendage called a *ligula*. Inflorescence terminal, rarely also from the sheaths of the upper leaves, the spikelets variously arranged in spikes, racemes, panicles, or heads. Bracts occasionally but rarely subtending the branches of the panicle or single spikelets.

SERIES A. PANICACEÆ.

Spikelets articulate with the pedicel below the glumes, with a single terminal fertile flower, in addition to which there is sometimes a male or sterile flower below it.

Mr. Bentham says :—"This first main division of Gramineæ is very fairly defined by the combination of two characters—the articulation of the pedicel below the spikelet or cluster of spikelets, and the single fertile flower apparently terminal, with or without a single male or sterile one below it. Where either of these two characters fails, the plant should be referred to Poaceæ."

Tribe 1. PANICEÆ.—Spikelets hermaphrodite, more rarely by abortion unisexual, spicate or paniculate, rhachis of the inflorescence not articulate. Glumes, flowering exaristate, fruiting indurated or at any rate more rigid than the exterior ones. Examples: *Paspalum* (see "Ditch Millet"), *Panicum* (see "Summer-grass"), *Cenchrus* (see "Scrub or Hillside Burr-grass").

Tribe 2. MAYDEÆ.—Spikelets unisexual, the terminal ones male, spicate or paniculate or (in *Pariana*, not Australian) surrounding the female, lower ones female spicate, separating joint by joint with the internode of the rhachis (except in *Zea*). Examples: *Coix* (see "Job's Tears") and *Zea* (the Maize.)

Tribe 3. ORYZEÆ.—Spikelets hermaphrodite or more rarely unisexual, paniculate or spicate; rhachis of the inflorescence not articulate; glumes, the uppermost beneath the flower (palea?), 1-nerved or carinate. Examples: *Oryza* (see "Rice"), and *Leersia*, the Rice-grass.

Tribe 4. TRISTEGINEÆ.—Spikelets hermaphrodite, placed singly along the inarticulate branches of the panicle, or more rarely in pairs or fascicles, articulate with pedicel. Glumes, empty aristate or muticus, flowering hyaline or finely membranous, terminated by a geniculate arista or muticus. Example: See *Arundinella*, a very common coarse grass met with on hillsides in Queensland.

T[illegible]. Zoysieæ.—Spikelets hermaphrodite or some imperfect, with inarticulate rhachis of the simple spike, which is furnished with joints consisting of a series, or fasciculate. Glumes, flowering, membranous, often smaller than the empty ones and hyaline.

Subtribe 1. *Anthephoreæ.*—Spikelets pedicellate, 3, or numerous crowded together in a deciduous fascicle. Glumes, the flowering sometimes a little longer than the empty ones, sometimes shorter and hyaline. Example: *Tragus racemosus*, the small Burr-grass.

Subtribe 2. *Euzoysieæ.*—Spikelets placed singly upon a pedicel, more rarely in pairs. Glumes, flowering shorter than the empty ones and hyaline. Examples: *Perotis rara*, the Comet-grass; and *Zoysia pungens*, the Coast Couch-grass.

Tribe 6. Andropogoneæ.—Spikelets along the rhachis of the spike or branches of the panicle most often in pairs, or the terminal ones in triplets. Spikelets in each pair homogamous or heterogamous. Glumes, flowering smaller than the empty ones, hyaline, often furnished with an awn. Examples: *Imperata* (see "Blady Grass"), *Saccharum* (see "Sugar-cane"); *Dimeria*, a grass resembling a *Chloris* common about Cairns; *Hemarthria*, a common grass on swampy land; *Andropogon* (see the Blue Grass), and *Anthistiria* (see "Kangaroo-grass," or the tall Oat-grass of the Darling Downs).

Series B. POACEÆ.

Pedicel continuous below the glumes. Rhachilla often articulate above the lower persistent glumes, continued beyond the fertile flowers, stipitiform or bearing either empty glumes or imperfect flowers, or sometimes there is a single terminal fertile flower as in the case of the Panicaceæ, but separating joint by joint with its own glume from the empty persistent glumes.

Mr. Bentham says:—"The main characters of Poaceæ consist, firstly, in the want of any articulation of the pedicel below the lower empty glumes, which remain persistent after the fruiting one has fallen away, or fall away separately; and, secondly, in the male or imperfect or rudimentary flowers, when present, being above, not below, the fertile one. The former character is all but universal; but from the latter one exceptions are not very rare, besides that, where there is only one flower without any continuation of the rhachilla beyond it, the character entirely fails. I should add that in some tribes of Poaceæ there are two or more perfect flowers in the spikelet, which is not the case in Panicaceæ."

Tribe 7. Phalarideæ.—Flowers single, terminal, hermaphrodite. Glumes 6 (or 5 and palea), 1-nerved or carinate. Examples: *Microlæna stipoides*, the Meadow Rice-grass; and *Phalaris canariensis*, the Canary-grass.

Tribe 8. Agrostideæ.—Spikelets with single flowers, rhachilla naked beyond the flower or prolonged into a bristle or stipes.

Subtribe 1. *Stipeæ.*—Panicle loose or irregularly spiciform. Glumes, flowering usually terminated in an awn, fruiting closely investing the caryopsis (grain). Rhachilla not prolonged beyond the flower. Examples: *Aristida*, the Three-Awned Spear-grasses; and *Stipa verticillata*, the Bamboo-grass so common in mountain scrubs.

Subtribe 2. *Phleoideæ.*—Panicle spike-like, compact, cylindrical or subglobose. Glumes, flowering muticus or terminated by 1 to 3 awns, fruiting loosely enclosing the grain. Rhachilla sometimes prolonged. Example: *Echinopogon ovatus*, the Rough-bearded Grass.

Subtribe 3. *Sporoboleæ.*—Panicle loose or reduced to a raceme, very rarely spiciform. Glumes, flowering muticus. Caryopsis (grain) somewhat denuded more frequently than the open glumes. Rhachilla not prolonged. Example: *Sporobolus* (see "Rat's-tail Grass," the "Jil-crow-berry" of the Cloncurry natives).

Subtribe 4. *Euagrosteæ.*—Panicle variable, more frequently loose. Glumes, flowering frequently furnished with a dorsal awn, very rarely muticus. Caryopsis loosely enclosed in a glume. Rhachilla often prolonged. Example: *Deyeuxia Forsteri*, a soft very light grass.

Tribe 9. AVENEÆ.—Spikelets bearing 2 or more flowers, more usually paniculate. Glumes, flowering very frequently furnished with a dorsal awn or sometimes with a terminal one. Rhachilla more usually prolonged beyond the flowers.

Subtribe 1. *Aireæ.*—Spikelets 2-flowered, rhachilla not produced beyond the flowers. Glumes, flowering muticus or rarely slender or shortly aristate. Examples: *Eriachne,* several species met with in Tropical Queensland.

Subtribe 2. *Euaveneæ.*—Spikelets 2 or numerous, rhachilla prolonged more or less beyond the flowers. Glumes, flowering very often bearing a dorsal or terminal awn, geniculate or twisted. Example: *Avena*, the Oat.

Tribe 10. CHLORIDEÆ.—Spikelets with 1 or more flowers sessile along the rhachis in 2 series of unilateral or second spikes. Examples: *Chloris*, any of the Star-grasses; and *Eleusine*, the Crab-grass.

Tribe 11. FESTUCEÆ.—Spikelets with 2 or more flowers variously paniculate or more rarely racemose. Glumes, flowering muticus or terminated in awns.

Subtribe 1. *Pappophoreæ.*—Flowering glumes many-nerved, furnished with 3 or more awns, or 4-lobed without awns. Example: *Pappophorum.*

Subtribe 2. *Triodieæ.*—Flowering glumes 1 or 3-nerved, furnished with 3 teeth (tridentate), 3-cleft (trifid), or 3-awns (triaristate). Example: *Triodia*, the so-called Spinifex.

Subtribe 3. *Arundineæ.*—Rhachilla furnished with long hairs below the flowering glumes. Examples: *Gynerium*, or Pampas Grass; also the Common Reed, *Phragmites*, or the large Bamboo Reed, *Arundo donax.*

Subtribe 4. *Seslerieæ.*—Inflorescence spiciform or capituliform, usually beset at its base with empty glumes or sterile stipites. Style or branches frequently long, slender. Example: *Elythophorus articulatus*, a grass found near Rockhampton.

Subtribe 5. *Eragrosteæ.*—Flowering glumes 3-nerved, the rest normal. Example: See any of the species of *Eragrostis* so plentiful in Queensland.

Subtribe 6. *Meliceæ.*—Glumes, flowering with 3 or more nerves, 2 or more empty glumes above them enveloping each other. Example: *Heterachne.*

Subtribe 7. *Centotheceæ.*—Leaves flat, lanceolate or ovate, with transverse veinlets between the veins. Glumes, flowering with 5 or more nerves. Example: *Centotheca lappacea*, a burr-grass of the tropical scrubs.

Subtribe 8. *Eufestuceæ.*—Glumes, flowering 5 or many-nerved, the rest normal. Example: *Briza minor*, the small Quaking grass; and *Poa cæspitosa*, called Tussac Poa or Weeping Polly grass.

Tribe 12. HORDEEÆ.—Spikelets with 1 or more flowers, sessile at the teeth or notches of the rhachis of the simple spike.

Subtribe 1. *Triticeæ.*—Spikelets placed singly at the nodes, with 3 or more flowers, more rarely with 2 flowers. Examples: The *Loliums*, *Secale*, and *Triticums*; that is to say, the Rye grasses, Rye, and Wheat.

Subtribe 2. *Leptureæ.*—Spikelets placed singly at the nodes, with 1 or 2 flowers; spike slender. Example: *Lepturus*, one species common on the Tropical Queensland coast.

Subtribe 3. *Elymeæ.*—Spikelets placed in pairs at the nodes, or more placed collaterally. Example: *Hordeum*, any of the Barleys.

Tribe 13. BAMBUSEÆ.—Lofty grasses, generally ligneous, at any rate at the base. Leaves flat, very often with articulate sheath. Spikelets with 1 or more flowers. Lodicules generally 3. Stamens 3, 4, or more.

Subtribe 1. *Arundinarieæ.*—Stamens 3. Palea bicarinate. Pericarp slender, adnate to the seed. Example: *Phyllostachys nigra*, the Black-stemmed Bamboo.

Subtribe 2. *Eubambuseæ.*—Stamens 6. Palea bicarinate. Pericarp slender, adnate to the seed. Example: *Bambusa vulgaris*, the Common Bamboo.

Subtribe 3. *Dendrocalameæ.* — Stamens 6. Palea bicarinate. Pericarp crustaceous, or fleshy, free from the seed. Example: *Dendrocalamus stricta.*

Subtribe 4. *Melocanneæ.*—Stamens 6, or more. Palea none, unless very similar to the glumes. Pericarp crustaceous or fleshy, free from the seed.

TRIBE I. PANICEÆ.

PANICUM, *Linn.*

(From *panicula*, a panicle; or *panis*, bread).

Spikelets with one terminal hermaphrodite flower and occasionally a male or rudimentary flower below it, rarely awned, variously arranged along the branches of a simple or compound panicle rarely reduced to a simple spike, the partial rhachis very rarely produced beyond the last spikelet; barren awnlike branches none, or very rarely a single one. Glumes usually 4, the outer one smaller than the others, not awned, often very small, deficient only in *P. gibbosum* (a rare species found in a few parts of Queensland and North Australia); the second and third very variable in relative proportions, the third occasionally with a palea with or without 3 stamens in its axil; fourth or fruiting glume smaller or as long as the third, of a firmer consistence, enclosing a palea and hermaphrodite flower. Styles distinct or very shortly united at the base. Grain enclosed in the hardened fruiting glume and palea, but free from them.

P. sanguinale, *Linn.* Summer Grass of Queensland. Decumbent and often shortly creeping and rooting at the base, ascending to 2 or 3 feet. Leaves flaccid, flat, usually pubescent and sprinkled with long hairs especially on the sheaths, but sometimes nearly glabrous. Spikes or panicle-branches 3 to 8, crowded at the end of a long peduncle, all from nearly the same point or shortly distant, 2 to 5 inches long, the rhachis slender but angular, flexuose, scabrous-ciliate. Spikelets in pairs, one nearly sessile the other pedicellate, oblong, rather acute, above 1½ lines long. Outer glume minute, rarely above ¼ line long, second glume lanceolate, 3-nerved, from a-half to three-fourths the length of the spikelet, third glume usually 5-nerved, glabrous or slightly ciliate, in the Australian form empty. Fruiting glume shorter, smooth.

By Authority: James C. Beal, Government Printer, Brisbane.

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